Arizona Medical Information Exchange (AMIE)
Proof of Concept User (POC) Evaluation

Terri Warholak, PhD, RPh
Assistant Professor, University of Arizona
College of Pharmacy

Ana Lucia Hincapie
Graduate Student, University of Arizona
College of Pharmacy

College of Pharmacy

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0. Summary of Results:

- At the end of the POC:
    - 71% of respondents perceived information retrieved from AMIE saved them time when providing care;
    - 71% of participants perceived that AMIE increases patient safety;
    - Nearly 65% of participants "Agree" or "Strongly Agree" AMIE improved the medication reconciliation workflow;
    - 71% of participants agreed that getting clinical information with AMIE decreases health care costs; and
    - 78% of participants "Agreed" that the implementation of AMIE was successful.

- Medication history was perceived as the most useful record type because it was the most comprehensive of the three types of data.

- The benefits most frequently mentioned included during the focus groups were: 1) identification of "doctor shopping" and validation of narcotic-seeking behavior; 2) averting duplicative testing, admissions and adverse drug reactions; and 3) increased efficiency in clinical information gathering.

- AMIE had the most perceived impact on clinical decisions in the emergency department and internal medicine groups.

- The most frequent barrier to using AMIE mentioned during the focus group was the limited set of clinical data available.

- Participants suggested that AMIE expansion should focus on additional records and record types, including other hospital and emergency room discharge summaries, imaging information, immunization records, and additional data providers.

- AMIE proved to be usable and functional. However, the impact of AMIE on health care quality and costs may become more evident when more practitioners and data providers are included.

0.5 Abstract

Background: Funded through the Federal Medicaid Transformation Grant Program, the Arizona Health Care Cost Containment System (AHCCCS), Arizona's single Medicaid Agency, developed the Arizona Medical Information Exchange (AMIE - also referred to in this report as the Viewer), a prototype system for the secure exchange and display of medical information. The inaugural cohort of authorized clinician users was granted access to AMIE's secure web-based application on September 29, 2009. This three month 'Proof of Concept' (POC) included 29 Phoenix-based providers affiliated with three major hospital systems who practiced in emergency departments, outpatient clinics, and private offices. Through AMIE, the inaugural cohort was equipped with web-based access to medication history, recent laboratory test results, and hospital discharge summaries across the systems for a small number of their patients.
Methods: The AMIE user outcomes assessment consisted of a three-month follow-up triangulation process. It included: 1) monthly print-based, cross-sectional questionnaires; 2) monthly focus groups and personal interviews; and 3) a periodic web-delivered questionnaire for economic outcomes measurement.
Results: Seventy nine percent (23 out of 29) of AMIE users completed the baseline and interim measurement 1 outcomes questionnaires, dropping to 55% (16 out of 29) for the interim measurement 2 outcome questionnaire and 52% for the final measurement. Similarly, for the corresponding focus group or personal interviews, 66% participated in the interim measurement 1 and final measurement, down to 52% in the interim measurement 2. The main reason cited by clinicians for not participating in the follow-up evaluation process was AMIE non-use.

Most respondents had realistic expectations of the clinical utility of the data available during the AMIE Proof of Concept: only 13% of those surveyed at baseline expected to "always find information" needed to provide care.

Medication history was perceived as the most useful record type because it was the most comprehensive of the three types of data, as little/no historical lab or discharge information was available early in the POC. By the end of the AMIE, 45% of participants "Strongly Agree" that having medication history at the point of care "reduces the probability of medication errors," 58% felt that the clinical information available "decreases health care costs," and 62% agreed that the quality of their decisions improved because additional clinical information was available to them at the time of care. Additionally, 42% and 50% in the interim measurement 1 and final measurement respectively, agreed that AMIE use "decreases duplication of health care services." Over half (53%) of the respondents predicted an improvement in patient safety with AMIE use, and remained stable in that perception (65%) during the final measurement of evaluation.

Focus group participants reflected on the benefits as well as the barriers to using AMIE as a patient care tool. The benefits most frequently mentioned included: 1) identification of "doctor shopping" and validation of narcotic-seeking behavior; 2) averting duplicative testing, admissions and adverse drug reactions; and 3) increased efficiency in clinical information gathering. The most frequent barrier mentioned was the limited set of clinical data available. Participants suggested that AMIE expansion should focus on additional records and record types, including other hospital and emergency room discharge summaries, imaging information, immunization records, and additional data providers.

Continuing AMIE users report strong use and demonstrate favorable attitudes, including the referral of peers and coworkers for AMIE credentialing.
Conclusions: AMIE proved to be usable and functional. It was viewed positively and some benefits were identified. However, the impact of AMIE on health care quality and costs may become more evident when more practitioners and data providers are included. Overall, participants agreed that the AMIE was successful.

1.Background

Funded through the Federal Medicaid Transformation Grant Program, the Arizona Health Care Cost Containment System (AHCCCS), Arizona's single Medicaid Agency, developed the Arizona Medical Information Exchange (AMIE also referred to in this report as the Viewer), a prototype system for the secure exchange and display of medical information. The inaugural cohort of authorized clinician users was granted access to AMIE's secure web-based application on September 29, 2009. This three month 'Proof of Concept' (POC) included 29 Phoenix-based providers affiliated with three major hospital systems who practiced in emergency departments, outpatient clinics, and private offices. Through AMIE, the inaugural cohort was equipped with web-based access to medication history, recent laboratory test results, and hospital discharge summaries across the systems for a small number of their patients.

2. Methodology

The AIME POC users were recruited by AHCCCS personnel over the past 12 months. Inclusion criteria included clinicians with AHCCCS affiliation, who are licensed in Arizona, and were endorsed or recommended by executive leaders from their places of employment. In addition, AIME POC Viewer users were required to commit time to participate in training and feedback meetings. Institutional Review Board (IRB) approval to conduct AMIE evaluation was granted by corresponding authorities at the University of Arizona. Participants were informed of all evaluation activities during the first focus group discussion and an informed consent form signed by each AMIE participant was collected (See Appendix A).

For this study both focus groups and survey research methods were used. Triangulation is an important method of determining validity and reliability because it involves the use of more than one method to develop and confirm data.

Monthly print-based, cross-sectional questionnaires

The instruments for data collection were developed by an iterative process that combined items previously published in the literature with new AMIE specific items not addressed by previous studies. The baseline survey, which was distributed in September 2008, consisted of 26 number of Likert scale items with the response options: "Strongly Disagree," "Disagree," "Agree," and "Strongly Agree." In addition, it included 12 frequency scale questions with responses "Never," "Rarely," "Often," and "Always." Both types of questions included a "Not Applicable" option. This questionnaire also included nine open-ended items and was organized by main goals: 1) AMIE operability and usability; 2) AMIE impact on treatment decisions; 3) medication reconciliation; and 4) technical utility training (see Appendix B). Content validity was assessed by members of the AMIE team. The post-questionnaires were distributed in the interim measurement 1 (October 2008), interim measurement 2 (November 2008), and final measurement (December 2008). Each one consisted of 72 items consisted of 30 number of Likert scale items and frequency scale. Both scales used the response options mentioned above. This questionnaire also included seven open-ended and nine multiple-choice items (see Appendix C). Participants completed the questionnaires during the focus groups. SAS® Statistical Analysis Software version 9.2 was used to calculate statistics and for the calculation of frequencies for responses. Statistical significance was defined a priori as $p<0.05$ (2-tailed test).

Monthly focus groups and personal interviews

A focus group discussion guide was developed by the AMIE multidisciplinary team based on a previously used electronic medical record focus group script (see Appendix D). Participants were asked to participate in a group session monthly. Each focus group lasted 45 minutes and included completion of

the print-based questionnaire before the group discussion began. To increase participation, personal or phone interviews were scheduled for clinicians unable to attend focus group sessions. During discussions, clinician responses were recorded on an audio-cassette while an author typed the participants' answers and comments verbatim into a word processing computer program (See Appendix E and F). Written transcripts were checked with the audio-cassette for accuracy.

Web-delivered questionnaire for economic outcomes measurement

A set of economic outcomes questions, developed based on reports from published literature, were uploaded in the AMIE web portal to be completed periodically (See Appendix G). However, the initial delay resulting from the uploading of lab data and discharge summaries resulted in a low weekly e-survey response rate (the highest of which was 21%). The requirement of a weekly e-survey completion was therefore suspended during data loading. It was available for optional use. But because response rates remained low analysis was not possible this web questionnaire will not be discussed further in this report.

3. Response Rate

Table 1 presents a list of response rates for the evaluation activities. Seventy nine percent (23 out of 29) of AMIE users completed the baseline and interim measurement 1 outcomes questionnaire and 52% (15 out of 29) of users completed the interim measurement 2 outcomes questionnaire. Similar response rate was observed for the final outcomes questionnaire (55%). Sixty six percent of users in the interim measurement 1 and final measurement and 52% percent in the interim measurement 2 participated in the corresponding focus group or personal interviews. The main reason mentioned by most of clinicians for not participating in the evaluation process was not using the Viewer during month the prior to evaluation.

Table 1: AMIE User Participation in Evaluation Activities

Viewer User's Last Name	Baseline Q.	Interim measurement 1 Outcomes Q.	Interim measurement 2 Outcomes Q.	Final measurement Outcomes Q.	Interim measurement 1 Focus G. Interview	Interim measurement 2 Focus G. Interview	Final measurement Focus G. Interview
Brown	1	1	1	0	1	1	0
Christopher	1	1	1	1	1	1	1
Croll	1	1	1	1	1	1	0
David	0	0	0	0	0	0	0
Dirlam	1	1	1	1	1	1	1
Dmowski	0	0	0	1	0	0	1
Ellert	1	1	1	0	1	1	0
Frechette	0	0	1	1	0	1	1
Grossman	1	1	0	1	1	0	1
Hemmady	1	1	0	0	1	0	1
Hsu	1	1	1	1	1	1	1
Kaplan	1	1	0	1	1	0	1
Kelly	1	1	1	1	1	1	1
Kuruvilla	0	0	0	0	0	0	0
Laufer	1	1	0	0	1	0	1
Lewis	1	1	1	0	1	1	0
Mac Collum	1	1	0	1	1	0	1
Mankin	1	1	0	1	1	0	1
Morgan	1	1	0	0	0	0	0
O'Sullivan	1	1	1	1	1	1	1
Pagel	1	1	0	0	0	0	1
Parisi	1	1	0	1	1	0	1
Peterson	1	1	1	1	1	1	1
Pophal	1	1	0	0	0	0	0
Raglow	0	0	1	1	0	1	1
Roque	0	0	1	0	0	1	0
Sisley	1	1	1	0	1	1	1
Stapczynski	1	1	0	0	0	0	0
Williamson	1	1	1	1	1	1	1
N=/29	23	23	16	15	19	15	19
Overall Response Rate	**79%**	**79%**	**55%**	**52%**	**66%**	**52%**	**66%**

Outcomes Q.= Outcome Questionnaire
Focus G. = Focus Group
1= Completed
0= Not Completed
Shaded rows indicate users who responded to all evaluations.

Table 2 shows user participation in outcomes assessment as grouped by provider specialty and gender. The most heavily represented groups were family practice (28%), internal medicine (28%) and females (72%).

Table 2: Overall AMIE User Participation in Evaluation Activities by Respondent Characteristics

Characteristic	Number of participants	%	Number of participants who participated in any evaluation activity	%*
Specialty				
Family Practice	8	28	7	88
Emergency Medicine	4	14	4	100
Internal Medicine	8	28	7	88
Pediatrics	5	17	5	100
Other	4	14	4	100
Total	**29**	**100**	**27**	
Gender				
Female	21	72	19	90
Male	8	28	8	100
Total	**29**	**100**	**27**	

* This percentage is calculated using number of participant in each category as denominator.

4. Results

4.0 Baseline Data

As shown in Figure 1, participants reported positive expectations regarding the clinical utility of the Viewer. Approximately 70% of respondents "Agreed" that the Viewer would improve patient health outcomes and more than 50% of clinicians expected to retrieve timely data from AMIE. At baseline, approximately 60% of clinicians indicated they expected to find information in the Viewer frequently. Likewise, participants expressed positive attitudes towards the potential benefit of AMIE on efficiency and workflow.

Many focus group participants agreed that the potential benefits of AMIE are enormous but limited to the amount of data present.

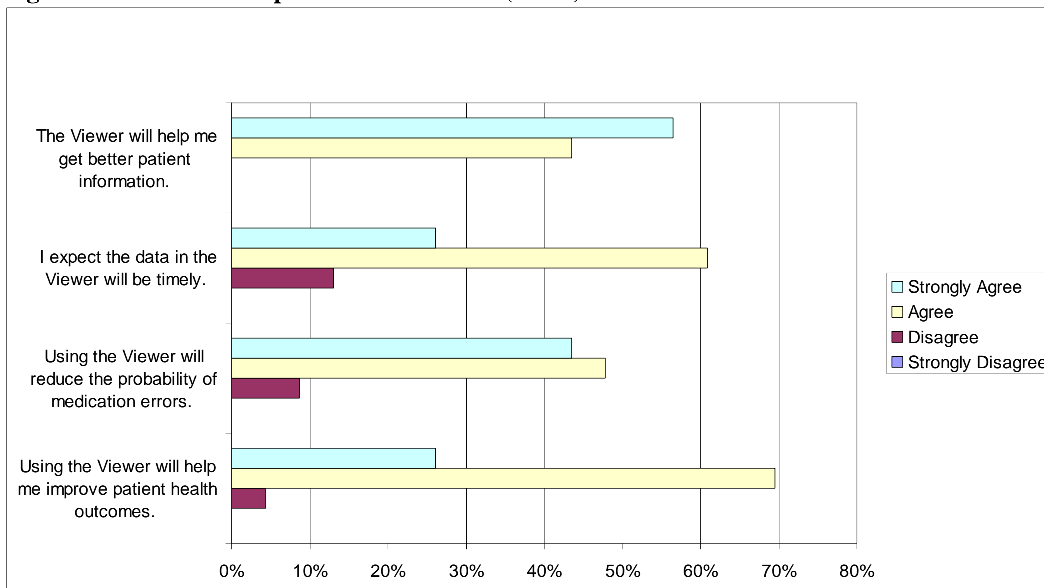
"I think the potential is massive, from my practice It has not yet been realized the same way I only have been able to pull off medicines. Our health care system in general is drastically terrible. Communication between hospitals, between systems between everything… Any effort that somebody is making on that to try to improve that is very important." Family Practice Physician.

"Ultimately this could be probably the most crucial intervention to revolutionize our health care in the state." Internal Medicine Physician.

"I think the potential is massive." Family Practice Physician.

"Discharge summaries will be very helpful. Patients often cannot tell you what hospital they were in and in general are poor about providing medical history." Internal Medicine Physician

Figure 1: Clinician's Expectations of AMIE (N=23) - Baseline Measurement



Clinicians had positive but realistic attitudes toward AMIE at baseline as can be seen in Figures 2 and 3. This indicates users acknowledged AMIE has potential benefits that may be noticeable when it its implemented on a larger scale and more data partners are present. Approximately 60% of participants "Often" expected to find patient information needed to provider care as shown in Figure 2.

Figure 2: Participants Responses to the Question "How often do you expect to find the information you need to provide care to your patients in the Viewer?" - Baseline Measurement

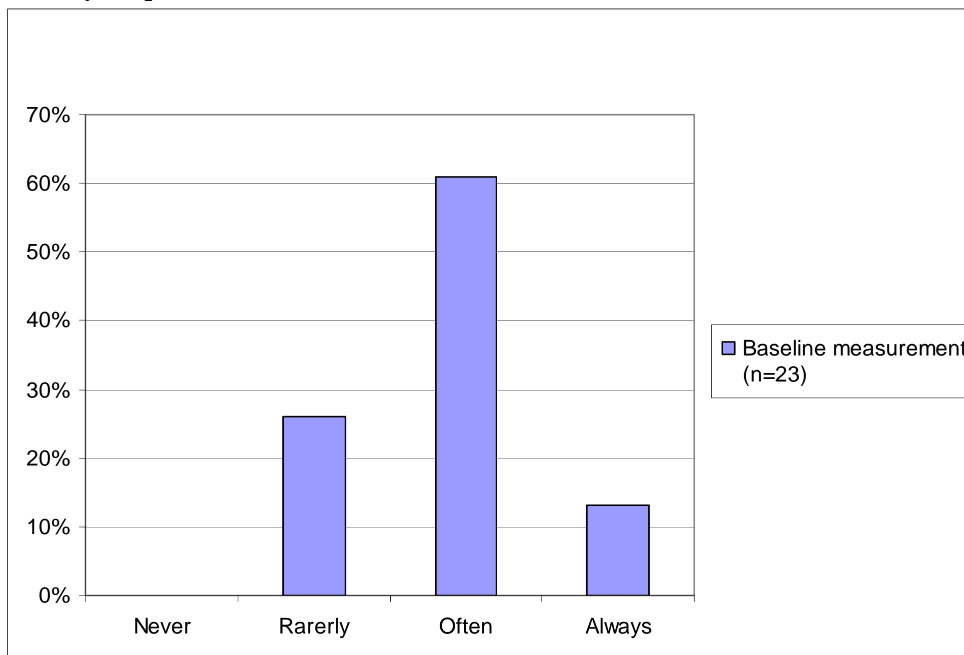
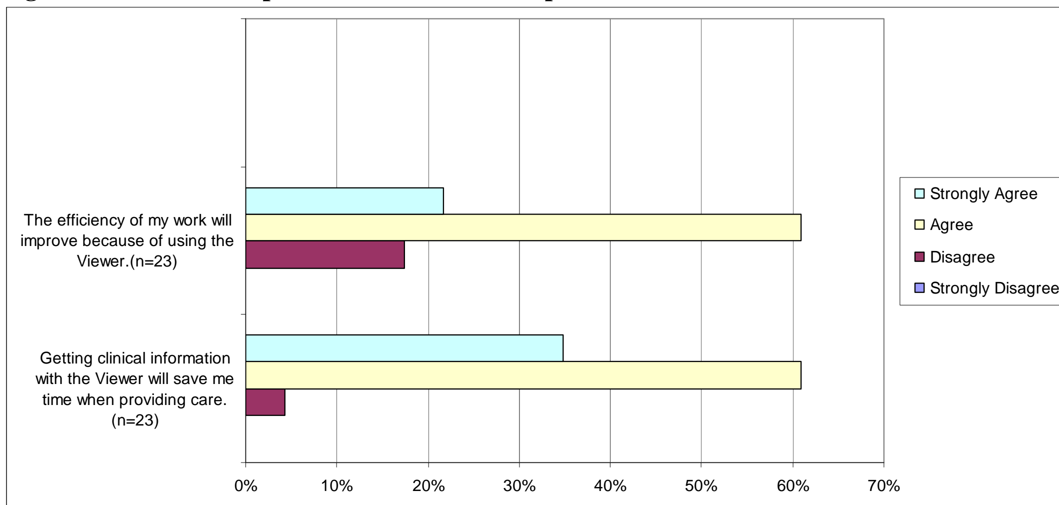


Figure 3 Clinician's Expectations of AMIE's Impact on Workflow - Baseline Measurement



As can be seen in Table 3, the majority of participants agreed, at baseline, that AMIE would improve the medication reconciliation process. Over two thirds (70%) of clinicians agreed AMIE would improve workflow, 74% agreed AMIE would facilitate obtaining information for medication reconciliation in a more timely manner. These potential benefits were also identified during the focus group sessions. Typical comments included:

"I think our patients are not good historians so if they can tell us what hospitals they were [admitted to] they may not be able to tell us what the diagnosis was on discharge … so it will be very helpful for us because of the discharge summaries." Internal Medicine Physician

"The pharmacy piece… If we could make that more universal and have other patients from other plans it would definitely be the biggest benefit for me." Internal Medicine Physician

Table 3: Clinicians Expectations of AMIE's Impact on Medication Reconciliation - Baseline Measurement

	Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Because of the Viewer, the medication reconciliation workflow at my practice setting will improve.	0	13(3)	70(16)	17(4)	0
Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process will decrease.	0	9(2)	74(17)	17(4)	0
The medication reconciliation process will be improved by using the Viewer because it provides more complete patient information.	0	17(4)	65(15)	17(4)	0
Because of the Viewer, the medication reconciliation workflow at my practice setting will be faster.	0	17(4)	65(15)	17(4)	0
Because of the Viewer, the medication reconciliation workflow at my practice setting will be more complete.	0	4(1)	78(18)	17(4)	0

Respondents expected all record types (i.e. medication history, lab information and discharge summaries) to "Often" have an impact on their clinical decisions (see Table 4). A large percentage of participants (60%) agreed that the ability of getting patient's information through AMIE would decrease health care costs (See Figure 4).

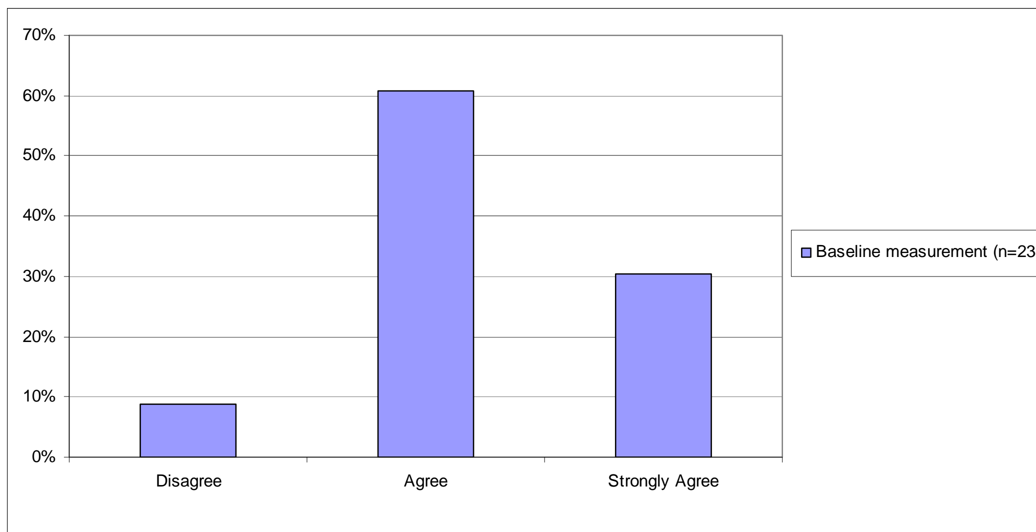
Findings from the first focus groups indicate that users thought AMIE would decrease health care costs because it would avoid duplication of medication and lab tests.

"I think the potential impact is massive. The American healthcare system is so inefficient and duplicative, that I appreciate any effort to improve that. When you look at the Institute of Medicine six recommendations for making health care better on of them is inefficiency - when you order the hemoglobin that was already ordered two weeks ago that is inefficiency. Other examples include admitting someone for something for which they were treated already, duplication of labs, ct scans, tests, etc." Family Practice Physician

Table 4: Clinicians Expectations of AMIE's Impact on Clinical Decisions - Baseline Measurement

	Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
How often do you expect **medication history** in the Viewer have an impact on your decision making process at the point of care?	0	22(5)	70(16)	9(2)	0
How often do you expect **discharge summary** in the Viewer have an impact on your decision making process at the point of care?	0	13(3)	78(18)	9(2)	0
How often do you expect **lab information** in the Viewer have an impact on your decision making process at the point of care?	0	22(5)	74(1)	4(1)	0

Figure 4: Participants Responses to "Getting clinical information with the Viewer decreases health care costs." - Baseline Measurement



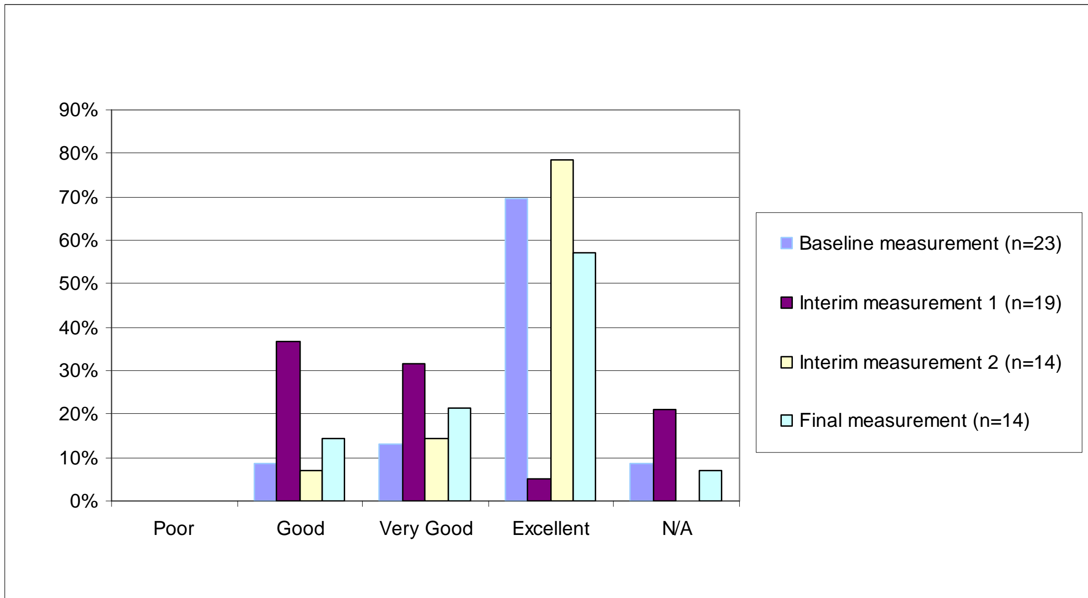
4.1 Follow-up Assessments

Following information corresponds to the results obtained from the interim measurement 1, interim measurement 2 and final measurement outcomes questionnaire and focus groups.

4.1.1 AMIE and Technical Utility

Figure 5 shows that clinicians had a positive opinion of AMIE training; more than 50% considered it excellent at the end of the POC. The first focus group session also served as time for correcting misconceptions regarding AMIE. For example, some users did not recall that AMIE includes data from all Arizona patients generated by participating providers for discharge summary and lab information. A few expressed difficulties finding the printing option and others did not recall that authorized medical assistants could retrieve AMIE information as well.

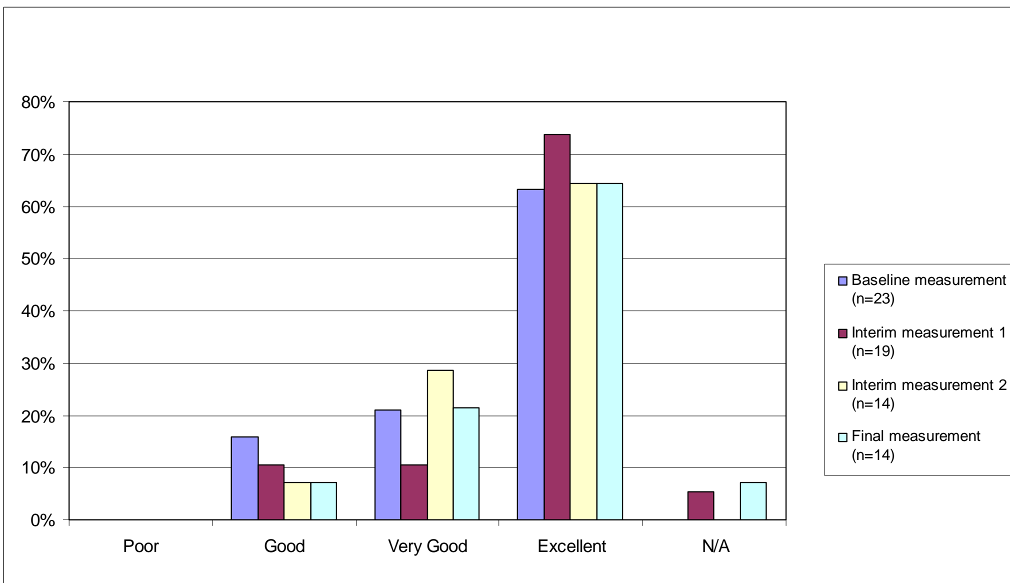
Figure 5: Participants Responses to the Question "How do you rate the training you have received for using the Viewer?" - Interim and Final Measurements



The results in Figure 6 show that perceptions regarding technical support through the POC evaluation period of evaluation remained positive. Focus group participants favored AMIE design and usability through all sessions as well as the customer service provided. Typical comments include:

> *"I think it's good, pretty slick." Emergency Medicine Physician*
>
> *"I think it's easy to get on to. It's not a barrier technically." Family Practice Physician*
>
> *"I think the usability is excellent." Internal Medicine Physician*

Figure 6: Participants Responses to the Question "How do you rate the support you have received from AHCCCS using the Viewer?" - Interim and Final Measurements



The results in Table 5 describe AMIE user opinions of the frequency of technical difficulties when using the Viewer or searching for information. All users had relatively little difficulty using or searching the Viewer, thus indicating it was well designed.

Table 5: Frequency of Technical Difficulties Reported by AMIE Users- Interim and Final Measurements

	Measurement	Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
How often do you have technical difficulties using the Viewer?	Interim measurement 1	37(7)	58(11)	5(1)	0	0
	Interim measurement 2	36(5)	50(7)	0	0	14(2)
	Final measurement	14(2)	64(9)	7(1)	7(1)	7(1)
How often do you have technical difficulties searching the information in the Viewer?	Interim measurement 1	37(7)	53(10)	5(1)	5(1)	0
	Interim measurement 2	50(7)	50(7)	0	0	0
	Final measurement	36(5)	50(7)	0	7(1)	7(1)

In the interim measurement 2, 23% of participants "Strongly Agreed" and 20% "Agreed" that the data in the Viewer are easy to use, and 40% "Agreed" the data were timely compared to 26% in the interim measurement 1. During all measurements more that 40% "Strongly Agreed" that as displayed, data in the viewer were easy to understand (see Table 6). In fact, in all focus groups sessions, participants expressed reiterated that AMIE was fast when searching and easy to use. Some participants expressed that AMIE should be integrated to electronic health medical records (EMR) to facilitate access to information.

Table 6: Participants Responses to "As displayed, the information in the Viewer is easy to understand." - Interim and Final Measurements

Measurement	Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Interim measurement 1	0	0	58(11)	42(9)	0
Interim measurement 2	0	0	47(7)	40(6)	13(2)
Final measurement	7(1)	0	36(5)	43(6)	14(2)

As can be seen in Figures 7,8, and 9, when asked to evaluate the technical utility of each record type, participants responded that medication history was the most user-friendly; nearly 80% percent of participants agreed in the interim measurements 1 and 2. This may be due to the fact that medication history was readily available from the beginning of the POC. The focus groups also provided essential evaluative information for the AMIE team. For example, during the first focus group some participants suggested chronological ordering of the medication history, facilitating navigation and use. The AMIE team acted on this suggestion and positive comments were received in the subsequent sessions.

It is worth noting that, a large percentage of participants selected "Not Applicable" for lab information when asked about technical utility (see Figures 7, 8 and 9) in the interim measurement 1, interim measurement 2 and final measurement. This may be due to the fact that participants were expecting more data earlier in the POC. However, lab information uploaded increased significantly after the second month of the POC.

Figure 7: AMIE Data Technical Utility - Interim Measurement 1 Responses (n=18)

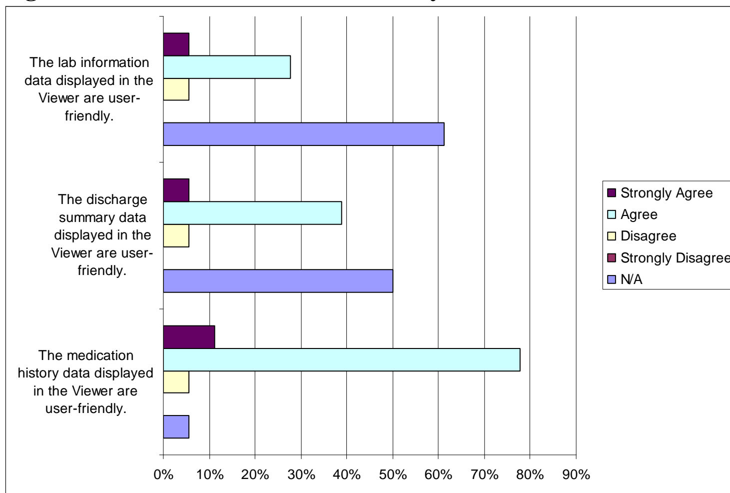


Figure 8: AMIE Data Technical Utility - Interim Measurement 2 Responses (n=14)

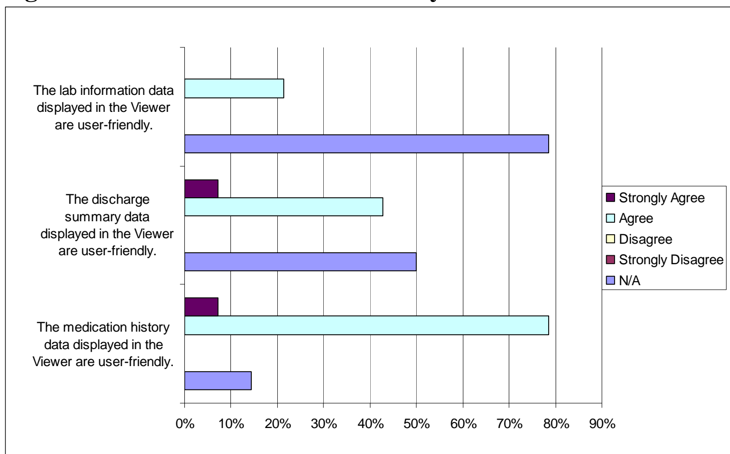
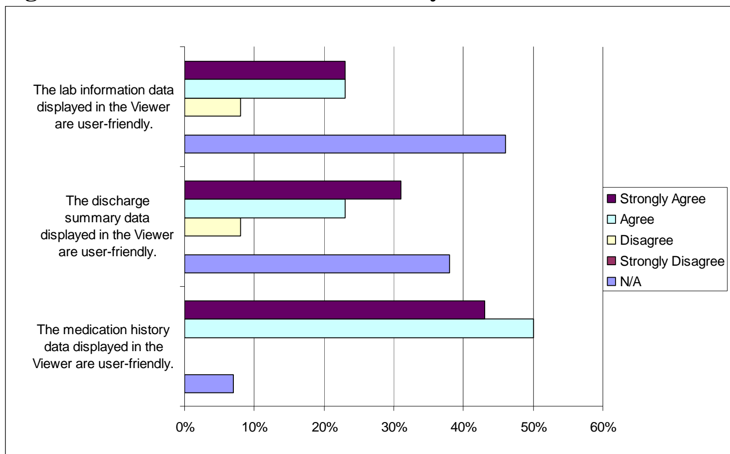


Figure: 9 AMIE Data Technical Utility - Final Measurement Responses (n=14)



As can be seen in Table 6, 53% and 67% of participants agreed that attesting their relationship to a patient in each query assures privacy in the interim measurements 1 and 2 respectively; indicating that this functionality should remain in future iteration of AMIE. Table 6 also presents results regarding the process of creating a password for accessing the Viewer. Participants agreed it was logical and no

additional comments were given during the focus group sessions. Participants agreed that the time limit of 15 minutes before logging out of the system is appropriate.

Table 6: Participant Attitudes toward AMIE Security Procedures - Interim and Final Measurements

	Measurement	Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Attesting your relationship to a patient each time is a good way to ensure privacy.	Interim measurement 1	0	11(2)	53(10)	32(6)	5(1)
	Interim measurement 2	0	20(3)	67(10)	0	13(2)
	Final measurement	0	0	57(8)	36(5)	7(1)
The password setting process for the viewer is logical.	Interim measurement 1	0	0	84(16)	16(3)	0
	Interim measurement 2	0	0	73(11)	13(2)	13(2)
	Final measurement	7(1)	0	64(9)	21(3)	7(1)

As indicated in Table 7, most of users used the last name/first name fields to find patients. None of the participants selected "AHCCCS ID search" in either the interim measurement 1 or interim measurement 2 because this search option was not available during the POC.

Table 7: Participants Responses to the Question "When using the Name search which of the (4) fields did you use most?" - Interim and Final Measurements

Measurement	Order	Last Name %(n)	First name %(n)	Date of birth %(n)	Gender %(n)	Not Applicable %(n)
Interim measurement 1	Most	95(18)	0	0	0	5(1)
	Second	0	89(17)	0	5(1)	5(1)
	Third	0	53(10)	42(8)	5(1)	0
	Least	5(1)	42(8)	47(9)	5(1)	0
Interim measurement 2	Most	87(13)	7(1)	0	0	7(1)
	Second	7(1)	73(11)	7(1)	7(1)	7(1)
	Third	0	13(2)	40(6)	40(6)	7(1)
	Least	0	14(2)	43(6)	36(5)	7(1)
Final measurement	Most	93(13)	0	0	0	7(1)
	Second	0	71(10)	21(3)	0	7(1)
	Third	0	7(1)	28(4)	58(8)	7(1)
	Least	0	14(2)	43(6)	36(5)	7(1)

Table 8 presents the results of user's perceptions of patient searching success when using "name" or "AHCCCS ID" criteria. Participants reported the "Name search" option as more successful than 'AHCCCS ID." The percentage of participants that perceived a positive frequency of direct patient hits when searching was 39%, 47% and 46% in the interim measurement 1, interim measurement 2 and final measurement respectively.

Table 8: AMIE Users' Perceived Patient Searching Success - Interim and Final Measurements

	Measurement	Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
When you use the **Name** search option how often did you find your patient?	Interim measurement 1	11(2)	39(7)	44(8)	6(1)	0
	Interim measurement 2	13(2)	40(6)	40(6)	0	7(1)
	Final measurement	0	43(6)	43(6)	7(1)	7(1)
When you use the **AHCCCS ID** search option how often did you find your patient?	Interim measurement 1	16(3)	11(2)	0	5(1)	68(13)
	Interim measurement 2	13(2)	7(1)	0	7(1)	73(11)
	Final measurement	8(1)	0	8(1)	0	84(11)
How often did the search options provide you direct patient **"hits"** for the patient you were searching for?	Interim measurement 1	11(2)	39(7)	39(7)	11(2)	0
	Interim measurement 2	13(2)	27(4)	47(7)	0	13(2)
	Final measurement	0	38(5)	46(6)	8(1)	8(1)

Table 9 describes the results for the question of perceived searching success discriminated by practice specialty. Results for this question seem to vary widely depending of the practice setting. It can be seen that 100% of emergency department practitioners perceived that they "Often" got direct hits in the interim measurement 1.

During the focus groups, some expressed feeling disappointed for not finding patients and therefore not being able to experience all AMIE benefits. This is the case for the members of the Maricopa County Health Care for the Homeless, since the clinic supplies the medication in the form of samples there is no medication history other than at the clinic where it was dispensed. Since they are not a data partner, AMIE does not contain this information. Secondly, their patients rarely go to a pharmacy and therefore no medication history information is supplied to AMIE. Additionally, patients provide incomplete or inaccurate names. Comments from center providers included:

"When I try to pull a patient… and it tells me the patient is not on there… I have the question about hyphenated Hispanic names. Our patients sometimes use a different name every place they go, especially if there is a warrant or something like that. So, it could be that the name and birthday they use in the front desk are not the same they used in the ER… So it's not your fault we can't pull up. That is something to be aware of." Family Medicine Physician from the Maricopa County Health Care for the Homeless

In contrast, emergency department physicians and members of the Heart and Vascular team expressed satisfaction with their search success rate. It can be seen that the type of patients and practice environment impacted information retrieval and therefore clinical use of AMIE.

Table 9: Participants Responses to the Question "How often did the search options provide you direct patient "hits" for the patient you were searching for?" - Interim and Final Measurements

		Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	25(1)	50(2)	25(1)	0	0
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	0	83(5)	0	17(1)	0
	Pediatrics	50(1)	0	50(1)	0	0
	Other	0	0	75(3)	25(1)	0
Interim measurement 2	Family Practice	33(2)	17(1)	50(3)	0	0
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	0	40(2)	40(2)	0	20(2)
	Pediatrics	0	33(1)	33(1)	0	33(1)
Final measurement	Family Practice	0	100(3)	0	0	0
	Emergency Medicine	0	50(1)	50(1)	0	0
	Internal Medicine	0	0	100(3)	0	0
	Pediatrics	0	50(1)	50(1)	0	0
	Other	0	0	33(1)	33(1)	33(1)

AMIE was built with the functionality to allow users to open multiple windows for different patients at the same time. As indicated in Table 10, the majority of clinicians did not utilize the multiple windows function to compare records. The results are consistent for all months. This may indicate that this function may not be useful for clinicians at the point of care or physicians were not aware of it. During focus groups sessions, physicians did not comment on this functionality.

Table 10: Participants Responses to the Question "How often did you use a new window to compare multiple records at once?" - Interim and Final Measurements

Measurement	Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Interim measurement 1	53(10)	11(2)	16(3)	0	21(4)
Interim measurement 2	67(10)	7(1)	0	0	27(4)
Final measurement	36(5)	43(6)	7(1)	0	14(2)

AMIE allows users to print patient's records. However this function was not much used. In the interim measurement 1, 50% (n=9) of participants said they never printed patient records whereas 28% (n=5) rarely did, 6% (n=1) often and 6% (n=1) always. In the interim measurement 2, 33% (n=5) expressed to print often, 33% (n=5) rarely and 20% (n=3) never did. This suggests that consulting the AMIE information in electronic format is sufficient. Focus group participants indicate the same results.

… I didn't print a single thing… it was terrific that I could at any time… I just took the data I learned from there, noted it on my own EMR. This enables people to have a complete paperless office, the only paper I gets every day is from all those consultants who don't want to adopt an EMR." Internal Medicine and Psychiatry Physician

As can be seen in Table 11, the majority of clinicians did not find inaccuracies in the AMIE data. This indicates users perceived AMIE data as reliable.

Table 11: Participants Responses to the Question "How often did you find data inaccuracies in the Viewer for each type of records?" - Interim and Final Measurements

	Measurement	Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Discharge Summary	Interim measurement 1	22(4)	17(3)	6(1)	0	56(10)
	Interim measurement 2	20(3)	13(2)	7(1)	0	60(9)
	Final measurement	31(4)	15(2)	0	0	54(7)
Laboratory Information	Interim measurement 1	16(3)	16(3)	0	0	68(13)
	Interim measurement 2	7(1)	7(1)	0	0	87(5)
	Final measurement	38(5)	8(1)	0	8(1)	46(6)
Medication History	Interim measurement 1	32(6)	26(5)	16(3)	0	26(5)
	Interim measurement 2	40(6)	20(3)	7(1)	0	33(5)
	Final measurement	31(4)	23(3)	0	8(1)	38(5)

4.1.2 AMIE Access to Information

Figures 10 and 11 represent participant responses when they were asked to describe how often they found the information in AMIE they expected and needed to provide care. Around 20% of participants in the interim measurement 1 and 40% in the final measurement reported that they "Often" found information expected. However many participants rarely found information they needed or expected within the Viewer. This can be due to the fact that the rate of finding patients varied across settings. When separated by specialty, it can be seen that emergency medicine providers reported higher percentages for this question (see Tables 12 and 13). These results agree with what was previously discussed as to rate of finding patients.

Figure 10: Participants Responses to the Question "How often did you find the information you expected to provide care?" - Interim and Final Measurements

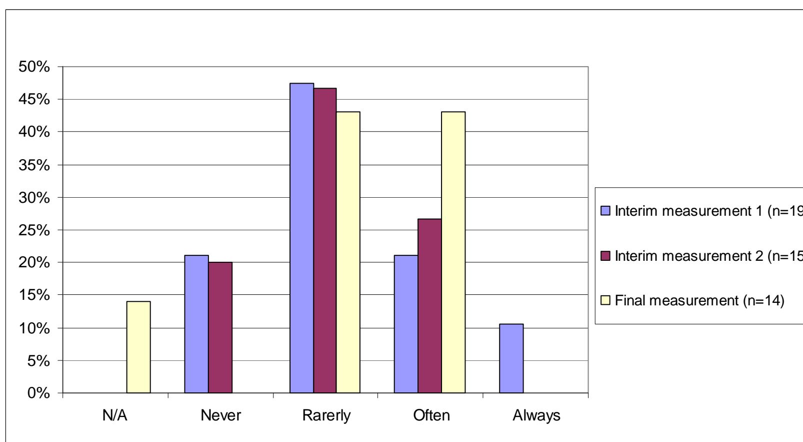


Table 12: Participants Responses to the Question "How often did you find the information you expected to provide care?" - Interim and Final Measurements

		Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	40(2)	60(3)	0	0	0
	Emergency Medicine	0	0	100 (3)	0	0
	Internal Medicine	17(1)	83(5)	0	0	0
	Pediatrics	50(1)	0	50(1)	0	0
	Other	0	25(1)	25(1)	50 (2)	0
Interim measurement 2	Family Practice	33(2)	50(3)	17(1)	0	0
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	20(3)	60(1)	20(3)	0	0
	Pediatrics	0	33(1)	33(1)	0	33(1)
Final measurement	Family Practice	0	67(2)	0	0	33(1)
	Emergency Medicine	0	50(1)	50(1)	0	0
	Internal Medicine	0	50(2)	50(2)	0	0
	Pediatrics	0	50(1)	50(1)	0	0
	Other	0	67(2)	0	0	33(1)

Figure 11 Participants Responses to the Question "How often did you find the information you needed to provide care?" - Interim and Final Measurements

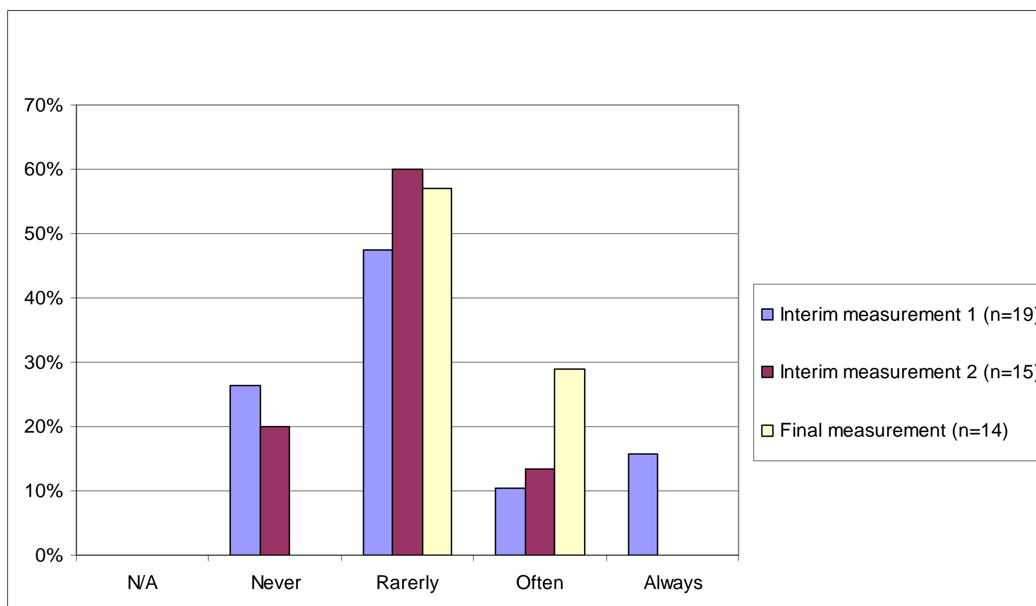


Table 13: Participants Responses to the Question "How often did you find the information you needed to provide care to your patients in the Viewer?" - Interim and Final Measurements

		Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	60(3)	40(2)	0	0	0
	Emergency Medicine	0	0	3(100)	0	0
	Internal Medicine	17(1)	83(5)	0	0	0
	Pediatrics	50(1)	0	50(1)	0	0
	Other	0	25(1)	0	75 (3)	0
Interim measurement 2	Family Practice	33(2)	67(4)	0	0	0
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	20(1)	60(3)	20(1)	0	0
	Pediatrics	0	67(2)	0	0	(33)1
Final measurement	Family Practice	0	67(2)	0	0	(33)1
	Emergency Medicine	0	50(1)	50(1)	0	0
	Internal Medicine	0	50(2)	50(2)	0	0
	Pediatrics	0	100(2)	0	0	0
	Other	0	33(1)	33(1)	0	33(1)

Results shown in Table 14 suggest that clinicians perceived the medication history information as the most reliable. The percentage of physicians who indicated they "Often" found the medication history information needed to provide care" was 33% and 50% in the interim measurement 1 and final measurement respectively. This may be due to the fact that medication history information was available since the launch of AMIE, additionally the inclusion of most AHCCCS pharmacy benefits managers contributes to completeness of these data.

Table 14: Participants Responses to the Question "How often did you find the following information you needed to provide care to your patients in the Viewer?" - Interim and Final Measurements

	Measurement	Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Medication History	Interim measurement 1	6 (1)	30(7)	33(6)	17 (3)	6(1)
	Interim measurement 2	7(1)	36(5)	43(6)	7(1)	7(1)
	Final measurement	0	43(6)	50(7)	0	7(1)
Laboratory Information	Interim measurement 1	61(11)	22(4)	6(1)	6(1)	0
	Interim measurement 2	43(6)	29(4)	7(1)	0	21(3)
	Final measurement	28(4)	43(6)	21(3)	0	7(1)
Discharge Summary	Interim measurement 1	50 (9)	33(6)	11(2)	6(1)	0
	Interim measurement 2	43(6)	29(4)	14(2)	0	14(2)
	Final measurement	15(2)	54(7)	15(2)	0	15(2)

As can be seen in Table 15, 16 and 17, providers' success in finding the data they needed to provide care varied with practice setting.

Table 15: Participants Responses to the Question "How often did you find the following information you needed to provide care to your patients in the Viewer?" - Interim and Final Measurements

			Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Medication History	Interim measurement 1	Family Practice	20(1)	20(1)	40(2)	0	20(1)
		Emergency Medicine	0	50(2)	0	50(2)	0
		Internal Medicine	0	83(5)	17(1)	0	0
		Pediatrics	0	0	100(1)	0	0
		Other	0	0	50(2)	50(2)	0
	Interim measurement 2	Family Practice	20(1)	60(2)	20(1)	0	0
		Emergency Medicine	0	0	0	100(1)	0
		Internal Medicine	0	40(2)	60(3)	0	0
		Pediatrics	0	0	67(2)	33(1)	0
	Final measurement	Family Practice	0	100(2)	0	0	0
		Emergency Medicine	0	50(1)	50(1)	0	0
		Internal Medicine	0	25(1)	75(3)	0	0
		Pediatrics	0	50(1)	50(1)	0	0
		Other	0	67(2)	0	0	33(1)

Table 16: Participants responses to the question "How often did you find the following information you needed to provide care to your patients in the Viewer?" - Interim and Final Measurements

			Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Laboratory Information	Interim measurement 1	Family Practice	5(100)	0	0	0	0
		Emergency Medicine	0	1(50)	0	0	1(50)
		Internal Medicine	67(4)	33(2)	0	0	0
		Pediatrics	100(1)	0	0	0	0
		Other	25(1)	25(1)	25(1)	25(1)	25(1)
	Interim measurement 2	Family Practice	80(4)	0	0	0	20(1)
		Emergency Medicine	0	100(1)	0	0	0
		Internal Medicine	20(1)	40(2)	20(1)	0	20(1)
		Pediatrics	33(1)	33(1)	0	0	33(1)
	Final measurement	Family Practice	67(2)	33(1)	0	0	0
		Emergency Medicine	0	50(1)	50(1)	0	0
		Internal Medicine	50(2)	50(2)	0	0	0
		Pediatrics	0	100(2)	0	0	0
		Other	0	0	67(2)	0	33(1)

Table 17: Participants Responses to the Question "How often did you find the following information you needed to provide care to your patients in the Viewer?" - Interim and Final Measurements

			Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Discharge Summary	Interim measurement 1	Family Practice	5(100)	0	0	0	0
		Emergency Medicine	0	50(1)	50(1)	0	0
		Internal Medicine	67(4)	33(2)	0	0	0
		Pediatrics	0	100(1)	0	0	0
		Other		50(2)	25(1)	25(1)	0
	Interim measurement 2	Family Practice	60(3)	20(1)	20(1)	0	0
		Emergency Medicine	0	100(1)	0	0	0
		Internal Medicine	60(3)	0	20(1)	0	20(1)
		Pediatrics	0	67(2)	0	0	33(1)
	Final measurement	Family Practice	0	67(2)	0	0	33(1)
		Emergency Medicine	0	100(2)	0	0	0
		Internal Medicine	50(2)	25(1)	25(1)	0	0
		Pediatrics	0	100(1)	0	0	0
		Other	0	33(1)	33(1)	0	33(1)

During focus group sessions, some attributed not experiencing AMIE benefits to using AMIE periodically; some of the reasons mentioned were seeing patients only a limited number of days during the week, or seeing patients whose records were not expected to be in AMIE (i.e. new born, non-AHCCCS members).

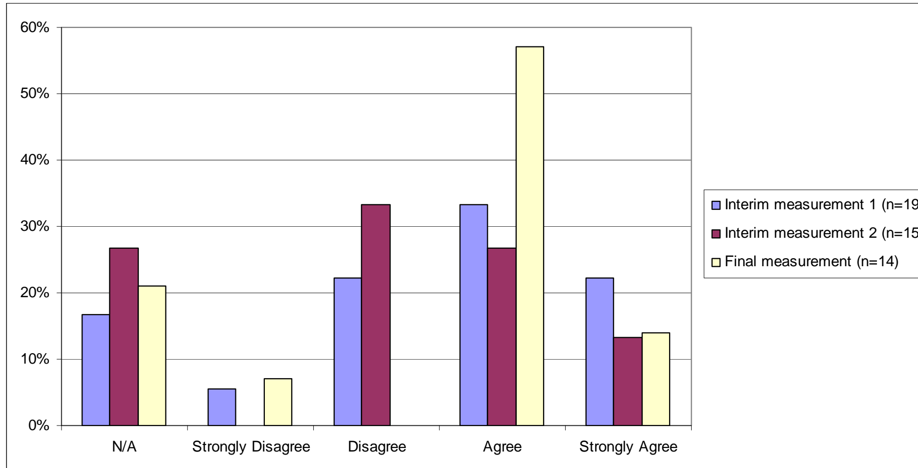
4.1.3 AMIE Impact on Health Care Costs

Figure 12 shows the distribution of the results when clinicians were asked whether the information obtained from the Viewer decreases health care costs. Results suggest participants agreed more with this statement at the end of the POC. Additionally, findings from focus groups indicate that decreasing of health care costs was a realized benefit for the majority of participants.

"One occasion when I was able to confirm a patient had had a cardiac workup within a manner of 90 days and I avoided an admission on that basis. It saved $10.000." Emergency Medicine Physician

"It saved that admission. That is a great example. I think that it has great potential for that. I have one example…so imagine if it's widely available for all clinicians across the state. Really accounts for significant saving for the AHCCCs program. I see potential in the future, more than I am getting right now. I think it is going to be even more powerful." Emergency Medicine Physician

Figure 12: Participants Responses to "Getting clinical information with the Viewer decreases health care costs." - Interim and Final Measurements



More specific questions on health care costs were asked to assess the perceived impact of AMIE. The results are shown in Table 18. Approximately 40%, 30% and 50% of participants agreed that AMIE decreases duplication of health care services in the interim measurement 1, interim measurement 2 and final measurement respectively. Results also suggest that participants perceived the Viewer had an impact on saving office resources such fax or mail. Focus group sessions identified that AMIE avoided redundant testing, especially computerized axial tomography scans and magnetic resonance images. Examples of commentaries on this topic included:

"Oh definitely decreases health care costs, because of decrease in duplication. Basically I have avoided a couple of CT scans." Internal Medicine Physician

"AMIE has and will decrease. Needs to be magnified and scaled up. You avoid a tremendous amount of duplication by having AMIE. It is easy to see that 7 million spent on the project will be coming back quickly. We need more users; several members of the group have looked over my shoulder to obtain information." Emergency Medicine Physician

Table 18: Participants Perceptions of the Impact of the AMIE on Health Care Costs- Interim and Final Measurements

	Measurement	Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Using the Viewer decreases duplication of health care services.	Interim measurement 1	5(1)	16 (3)	42(8)	25(5)	11(2)
	Interim measurement 2	0	13(2)	33(5)	27(4)	27(4)
	Final measurement	7(1)	7(1)	50(7)	21(3)	14(2)
Getting clinical information with the Viewer saves resources for my practice setting (i.e. fax, mail, phone, calls).	Interim measurement 1	5(1)	21(4)	32(6)	21(4)	21(4)
	Interim measurement 2	0	36(5)	50(7)	0	14(2)
	Final measurement	7(1)	7(1)	50(7)	14(2)	21(3)

As shown in Table 19, during the POC participants considered that medication history decreases duplicative therapy therefore decreasing health care costs. It can be estimated that duplicative prescriptions for AHCCCS represent $XXXXX. This could be reduced with AMIE as suggested by the POC results. From the POC findings it can be estimated that AMIE potentially would decrease $XXXXXXXXX in unnecessary testing.

Table 19: Participants Responses to "The following information in the Viewer decreases duplicate therapy." - Interim and Final Measurements

	Measurement	Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Medication History	Interim measurement 1	0	0	78(14)	11(2)	11(2)
	Interim measurement 2	0	31(4)	46(6)	8(1)	15(2)
	Final measurement	7(1)	7(1)	57(8)	21(3)	7(1)
Discharge Summary	Interim measurement 1	0	17(3)	17(3)	17(3)	50(8)
	Interim measurement 2	0	21(3)	29(4)	0	50(7)
	Final measurement	8(1)	0	23(3)	23(3)	46(6)
Laboratory Information	Interim measurement 1	0	6(1)	22(4)	17(3)	56(10)
	Interim measurement 2	0	8(1)	15(2)	8(1)	69(9)
	Final measurement	7(1)	0	28(4)	36(5)	28(4)

4.1.4 AMIE Impact on Clinical Decisions

As shown in Figure 13, approximately 50% of clinicians indicated that the Viewer "Rarely" had an impact on their clinical decisions. However, from focus group discussions it is clear that this is due, in large part, to the inability to find patients in AMIE (low patient hit rates or failure to use AMIE on a routine basis). When separated by specialty, it can be seen that AMIE had the most perceived impact on clinical decisions in the emergency department group and internal medicine (see Table 20).

Figure 13: Participants Responses to the Question "How often does using the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

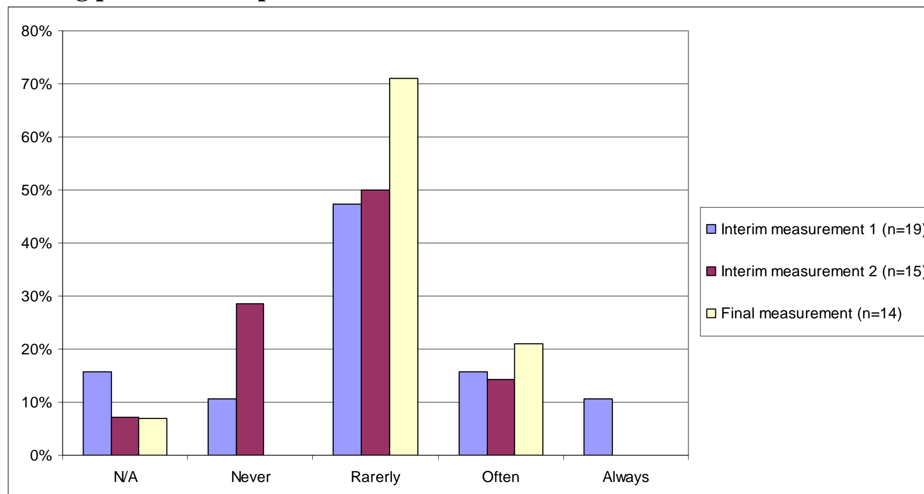


Table 20: Participants Responses to the Question "How often does using the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

		Never %(n)	**Rarely %(n)**	**Often %(n)**	**Always %(n)**	**Not Applicable %(n)**
Interim measurement 1	Family Practice	25(2)	25(2)	0	0	50(1)
	Emergency Medicine	0	50(1)	50(1)	0	0
	Internal Medicine	0	66(4)	17(1)	0	17(1)
	Pediatrics	0	50(1)	0	0	50(1)
	Other	0	25(1)	25(1)	50(2)	0
Interim measurement 2	Family Practice	60(3)	40(2)	0	0	0
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	20(1)	60(3)	20(1)	0	0
	Pediatrics	0	66(2)	0	0	17(1)
Final measurement	Family Practice	0	100(2)	0	0	0
	Emergency Medicine	0	50(1)	50(1)	0	0
	Internal Medicine	0	0	0	100(2)	0
	Pediatrics	0	100(2)	0	0	0
	Other	0	67(2)	0	0	33(1)

Figures 14, 15, 16 and Table 21, 22 and 23 display users perceptions of each AMIE record type on their clinical decisions. Results indicted medication history information had the most impact compared to the other record types (i.e. discharge summary and lab information). Nearly 25% and percent 65% of participants indicated that medication history "Often" had an impact on their decisions when providing care in the interim measurement 1 and final measurement respectively. A large percentage of participants selected "Not Applicable" to this question for both lab information and discharge summary records. This may be because more medication history records were available earlier; therefore users had more encounters with medication history information. However, it seems that the percentage of user who selected "Not Applicable" for discharge summary records decreased from the interim measurement 1 to the final measurement (50% vs. 28%).

Figure 14: Participants Responses to the Question "How often does medication history in the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

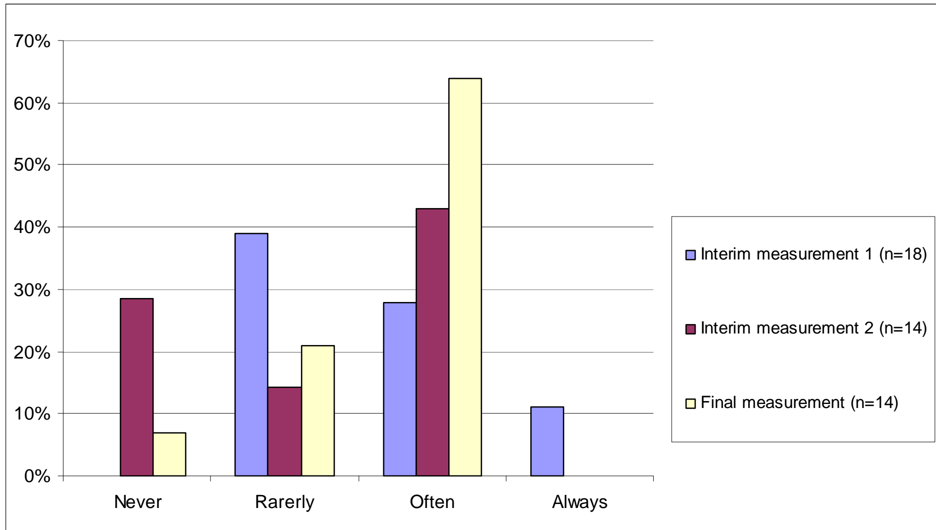


Table 21: Participants Responses to the Question "How often does medication history in the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

			Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Medication History	Interim measurement 1	Family Practice	0	40(2)	0	0	60(3)
		Emergency Medicine	0	50(1)	50(1)	0	0
		Internal Medicine	0	33(2)	33(2)	17(1)	17(1)
		Pediatrics	0	100(1)	0	0	0
		Other	0	25(1)	50(2)	25(1)	0
	Interim measurement 2	Family Practice	60(3)	20(1)	0	0	20(1)
		Emergency Medicine	0	0	100(1)	0	0
		Internal Medicine	20(1)	0	80(4)	0	0
		Pediatrics	0	33(1)	33(1)	0	33(1)
	Final measurement	Family Practice	0	33(1)	33(1)	33(1)	0
		Emergency Medicine	0	0	100(2)	0	0
		Internal Medicine	0	50(2)	50(2)	0	0
		Pediatrics	0	0	100(2)	0	0
		Other	0	0	67(2)	0	33(1)

Figure 15: Participants Responses to the Question "How often does discharge summary in the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

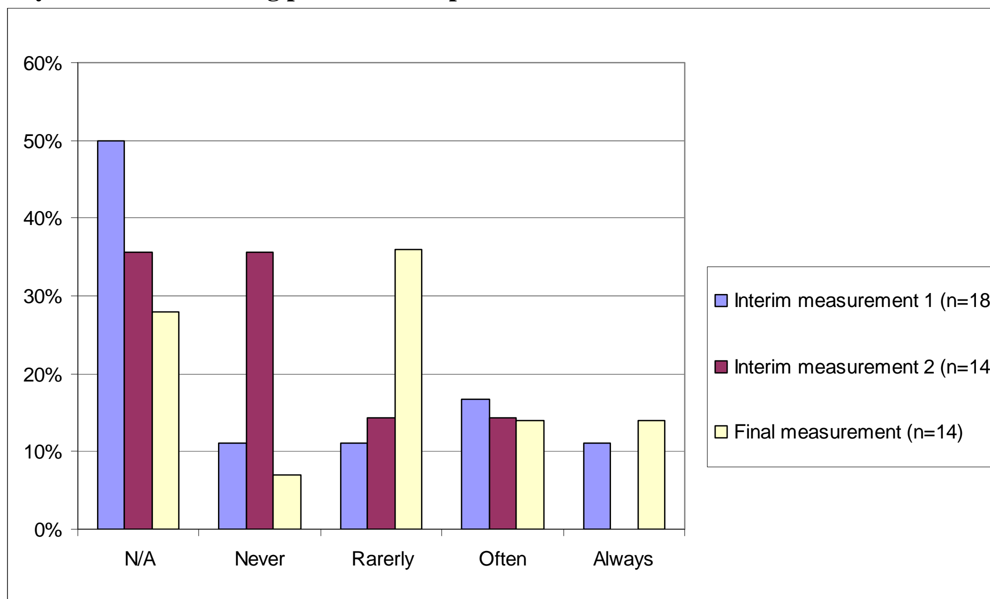


Table 22: Participants Responses to the Question "How often does discharge summary in the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

			Never %(n)	Rarely %(n)	Often %(n)	Always %(n)	Not Applicable %(n)
Discharge Summary	Interim measurement 1	Family Practice	40(2)	0	0	0	60 (3)
		Emergency Medicine	0	50(1)	50(1)	0	0
		Internal Medicine	0	0	0	17(1)	83(5)
		Pediatrics	0	100(1)	0	0	0
		Other	0		50(2)	25(1)	25(1)
	Interim measurement 2	Family Practice	80(4)	0	0	0	20(1)
		Emergency Medicine	0	0	100(1)	0	0
		Internal Medicine	20(1)	0	20(1)	0	60(3)
		Pediatrics	0	67(2)		0	33(1)
	Final measurement	Family Practice	33(1)	67(2)	0	0	0
		Emergency Medicine	0	0	100(2)	0	0
		Internal Medicine	0	25(1)	0	25(1)	50(1)
		Pediatrics	0	100(2)	0	0	0
		Other	0	0	0	33(1)	67(3)

Figure 16: Participants Responses to the Question "How often does laboratory information in the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

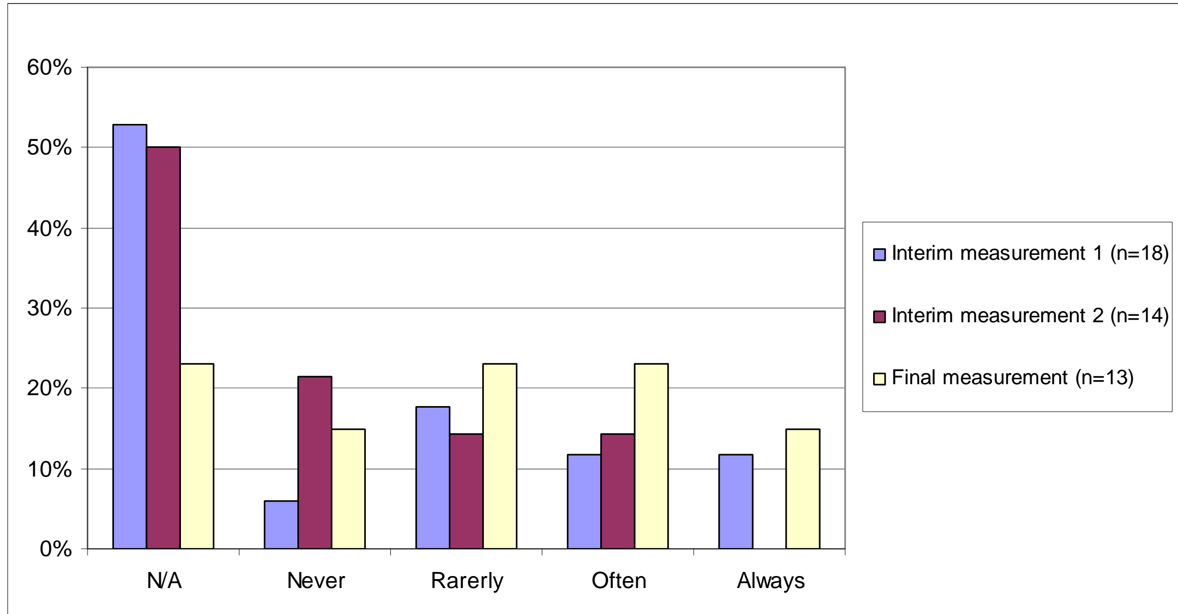


Table 23: Participants Responses to the Question "How often does laboratory information in the Viewer have an impact on your decision making process at the point of care?" - Interim and Final Measurements

			Never %(n)	**Rarely %(n)**	**Often %(n)**	**Always %(n)**	**Not Applicable %(n)**
Laboratory Information	Interim measurement 1	Family Practice	25(1)	0	0	0	75(3)
		Emergency Medicine	0	100(2)	0	0	0
		Internal Medicine	0	0	0	17(1)	84(5)
		Pediatrics	0	0	50(1)	0	50(1)
		Other	0	33(1)	33(1)	33(1)	0
	Interim measurement 2	Family Practice	40(2)	0	0	0	60(3)
		Emergency Medicine	0	0	0	0	100(1)
		Internal Medicine	20(1)	20(1)	40(2)	0	20(1)
		Pediatrics	0	33(1)	0	0	67(2)
	Final measurement	Family Practice	33(1)	33(1)	0	0	33(1)
		Emergency Medicine	0	0	100(2)	0	0
		Internal Medicine	33(1)	33(1)	0	33(1)	0
		Pediatrics	0	50(1)	0	0	50(1)
		Other	0	0	33(1)	33(1)	33(1)

Findings from the focus groups indicate that when the physicians found patient information in the AMIE it impacted their clinical decisions. Focus group participants revealed that AMIE helped:

- to make better decisions

"As emergency physician, we are in a unique position having to make decisions quickly often with limited information. So the more information I can get the better decision I can make, certainly more comfortable and more safely for the patient and medical legally as well." Emergency Medicine Physician

"When searches are fruitful, it does have a tremendous impact because I am able to see… to make sure I'm not duplicating labs, duplicating meds, it' just really helps in everything. It enables me to know what other providers the patient's seeing, because often they don't know that." Internal Medicine and Psychiatry Physician

- clarified treatment plans

"… a medication they were unclear about for seizure disorder and they thought they had been taken off of it but it turned out they were still on that. So that helped to clarify their treatment plan. And it was at night and I wasn't able to reach the primary physician… so that was helpful too." Emergency Medicine Physician

- check on patient compliance

"knowing what medications pts are on…. I found several patients that were supposed to be picking up drugs and we can see these gaps where they had the drugs… Picking up the medications for diabetes or hypertension. It is something you can call them on… otherwise they would just say oh yes.. I take them everyday. Now I can show them.. print out the list and say this is what we have here." Internal Medicine and Psychiatry Physician

- improved physician-patient relation,

" I had a suspicion a patient was abusing narcotics. I found that through the AMIE that the patient was telling the truth, thus now I have more trust with the patient." Internal Medicine Physician

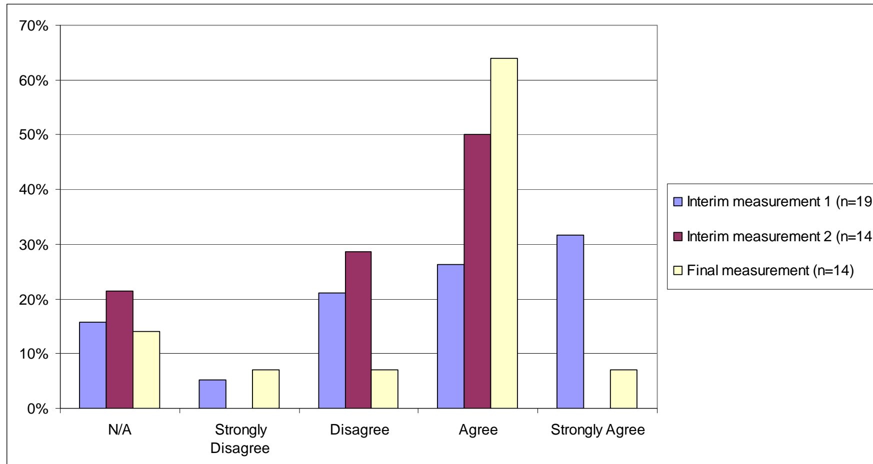
- identified "doctor shopping" behavior in some patients

"It's very powerful. We dismissed a patient from a practice, we contacted AHCCCS. We found the Dr. Shopper." Emergency Medicine Physician

4.1.5 AMIE Impact on Patient Safety

Because a major driving force of AMIE is improving quality of care, this study measured the perceived impact of AMIE on patient safety. The information presented in Figure 17 shows that clinicians perceived that AMIE increases patient safety. Most respondents indicated that they "Strongly Agree" (30%) or "Agree" (25%) in the interim measurement 1 in the aforementioned question. In the final measurement, 64% of participants responded that they "Agreed" to the same question.

Figure 17: Participants Responses to "I feel that patient safety has improved because of using the Viewer."- Interim and Final Measurements



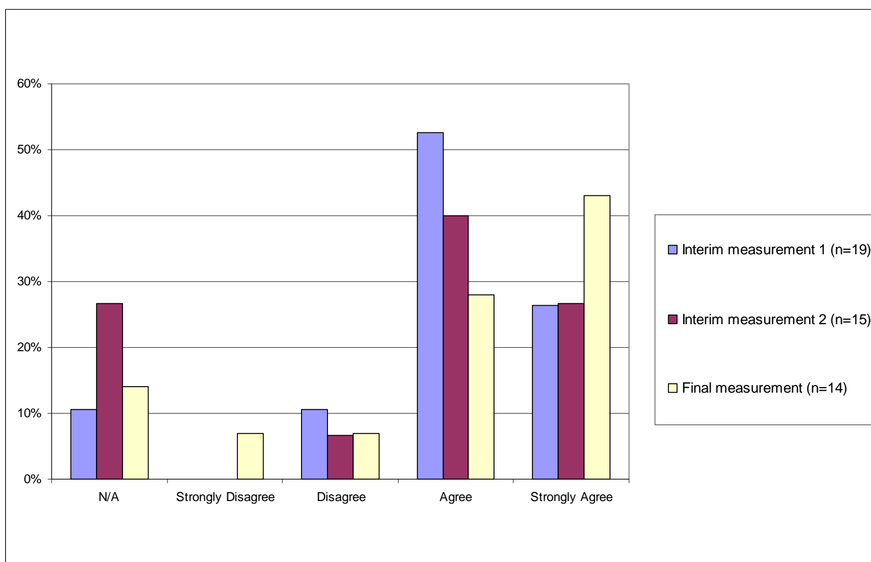
Reducing the probability of medication errors is also a process that leads to increased patient safety; results represented in Figure 18 indicate that a large percentage of users thought that AMIE reduces the probability of medication errors. It is worth noting the high percentage of participants who selected "Agree" (50% and 40% for the interim measurement 1 and interim measurement 2 respectively) or "Strongly Agree" (nearly 45% for the final measurement) for this question.

These results were confirmed by participants during the focus groups. Emergency department (ED) clinicians were able to identify some patients exhibiting "drug seeking" behavior. This had an impact on duplicate prescriptions and represents broader public health benefits. ED participants expressed that "Dr. shopping" and "drug seeking" behavior are common scenarios faced regularly in their practice setting.

"This particular patient had been either seen by five physicians…She was getting 20 or 30 prescriptions every 2 or 3 days from variety of physicians." Internal Medicine Physician

"AMIE assists me with not sending the patient out with a prescription they don't need. Overall it will interweave quality and safety" Internal Medicine Physician

Figure 18: Participants Responses to "Using the Viewer reduces the probability of medication errors." - Interim and Final Measurements



It can be seen in Table 24 that when divided by specialty, the majority of users in all specialties "Agreed" or "Strongly Agreed" that AMIE reduces probability of medication errors thus increasing patient safety.

"You have mentioned the reduction of medication errors, I agree with you on that but the biggest benefit I find is that there is a huge problem in the emergency department state with narcotic medication seeking and diversion and we can suspect things but we don't have data to back it up when you encounter a patient. We have had other ways to try to get the information such as calling a large pharmacy chain and query their data base to see if this person has gone to other facilities. But that is time consuming. So I have found the Viewer quite helpful, when I called up the patient on there and can get some useful information that I can ... I can make a note in my EMR so in future encounters it would signal any future providers . so it's a way of reducing the abuse of opioid medications and some others that are abused as well." Emergency Medicine Physician

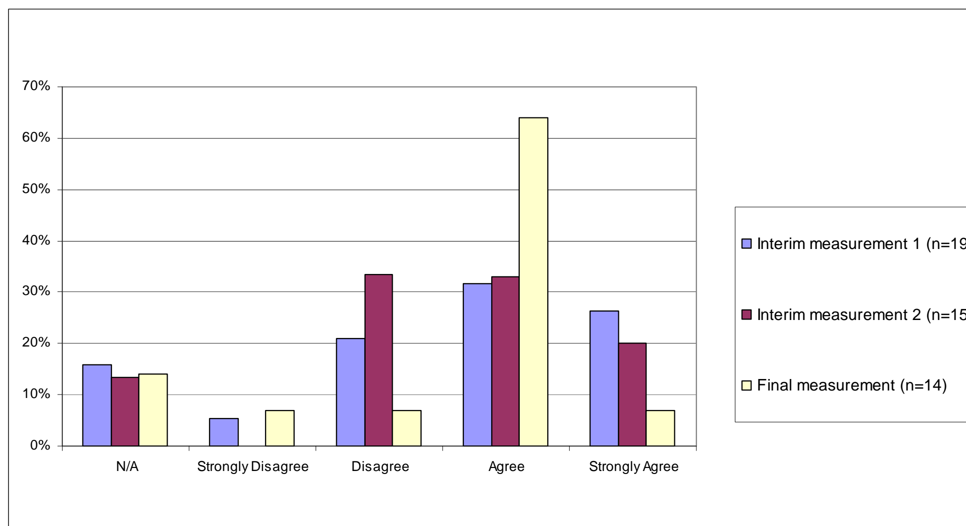
Table 24: Participants Responses to "Using the Viewer reduces the probability of medication errors." - Interim and Final Measurements

		Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	0	20(1)	60(3)	0	20(1)
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	0	0	50(3)	33(2)	17(1)
	Pediatrics	0	50(1)	50(1)	0	0
	Other	0	0	25(1)	75(3)	0
Interim measurement 2	Family Practice	0	17(1)	50(3)	0	33(2)
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	0	0	20(1)	60(3)	20(1)
	Pediatrics	0	0	33(1)	33(1)	33(1)
Final measurement	Family Practice	33(1)	0	0	33(1)	33(1)
	Emergency Medicine	0	0	50(1)	50(1)	0
	Internal Medicine	0	25(1)	50(2)	25(1)	0
	Pediatrics	0	0	0	100(2)	0
	Other	0	0	33(1)	33(1)	33(1)

4.1.6 AMIE Impact on Quality

Results represented in Figure 19 suggest that clinicians believed that AMIE helps them make better clinical decisions, as the majority of users agreed that their decisions quality improved with the Viewer. Approximately 32% "Agreed" and 25% "Strongly Agreed" in the interim measurement 1. Same result trends were found in the final measurement.

Figure 19: Participants Responses to "The quality of my decisions has improved because of using the Viewer." - Interim and Final Measurements



Results shown in Table 25 may be driven by the users ability to find patients on AMIE. Participants in the focus groups expressed that overall AMIE improved their decisions quality.

Table 25: Participants Responses to "The quality of my decisions has improved because of using the Viewer." - Interim and Final Measurements

		Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	20(1)	40(2)	20(1)	0	20(1)
	Emergency Medicine	0	0	50(1)	50(1)	0
	Internal Medicine	0	16(1)	50(3)	16(1)	16(1)
	Pediatrics	0	50(1)	0	0	50(1)
	Other	0	0	25(1)	75(3)	0
Interim measurement 2	Family Practice	0	83(4)	17(1)	0	0
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	0	0	40(2)	40(2)	20(1)
	Pediatrics	0	0	33(1)	33(1)	33(1)
Final measurement	Family Practice	33(1)	0	33(1)	33(1)	0
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	25(1)	0	75(3)	0	0
	Pediatrics	0	0	100(2)	0	0
	Other	0	0	33(1)	33(1)	33(1)

4.1.7 AMIE Impact on Efficiency

Participants incorporated AMIE into their workflow in different ways. Some expressed they checked AMIE before seeing the patient while others preferred to do it during or after the patient visit Focus group sessions revealed that the impact on workflow varies depending on the type of practice setting. For those who have medical assistants retrieving AMIE information, workflow and efficiency stayed equal or improved, this may explain results shown in Table 26. Solo practitioners indicated that AMIE sometimes slowed them down their efficiency. However, many of participants agreed that it is faster to get records from AMIE than to request them from other practitioners or to obtain them directly from the patient.

"It's easier to go in here and get the information instead of having the patient requested it. It can take a week or 10 days before we get information from the hospital. So that definitely improves efficiency and patient care." Emergency Medicine Physician

"When searches come up then quality improves, because I got information I didn't have normally, I rely on the patient to give me whatever material they have and usually they barley know how to pronounce their meds... much less what dosing they are on. So it saves me time, it's more efficient when the search comes up as positive because I know the meds they are on, what dosages, and who the doctors are." Internal Medicine and Psychiatry Physician

"Getting the pharmacy pieces is so difficult I can't tell you how difficult and how we fight on a daily basis with all of our patients." Emergency Medicine Physician

"I guess one thing is we can get the information without a phone call so even if there's nothing there, at least we find out that there's nothing there. For example, we had a patient with discharge from county hospital and we looked on the viewer and it wasn't there but it was already 4 days later and we didn't bother calling the county hospital" Internal Medicine Physician

"I do it myself, I never have asked my MA to do it so I just do it myself. I haven't really incorporated it into my work flow, I just check it when I think of it, sort of on the side." Internal Medicine Physician

Findings from the focus groups suggest that users who already used EMR were able to incorporate AMIE easily into their workflow.

"It's part of my natural workflow now. I have three programs that I load up in my shift. On average I see 25 patients or 30 patients per shift, I'm using the viewer… probably three times in that shift… I plan on using it more now that I know that there are these other patients that apply too. It's another tool that I have just right at my finger tips so that is part of my work flow." Emergency Medicine Physician

"I keep an icon on my computer to log on, I can very efficiently get on and query on a patient if I wish to , and I don't have to spend a lot of time messing around, it saves me." Emergency Medicine Physician

"Like I said I have a view open periodically, which's interesting in my hospital that's all I do, is the computer we don't have paper charts. It's just one more computer application opened." Family Practice Physician

Figure 20: Participants Responses to "The efficiency of my work has improved because of using the Viewer." - Interim and Final Measurements

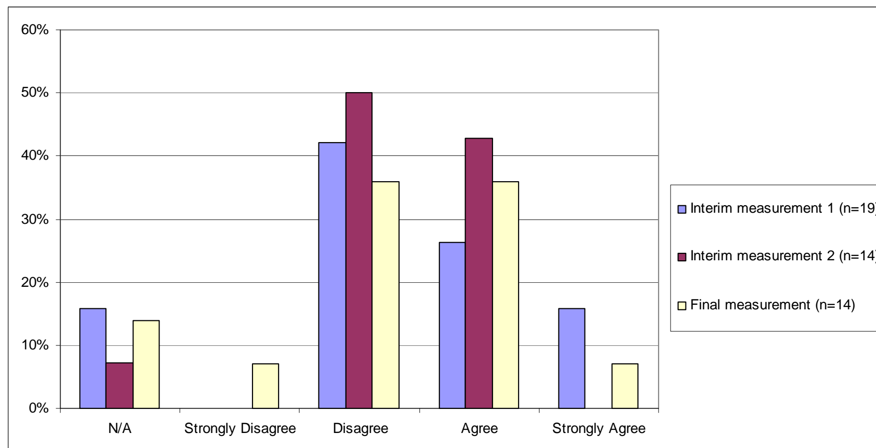


Table 26: Participants Responses to "The efficiency of my work has improved because of using the Viewer." - Interim and Final Measurements

		Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	0	80(4)	0	0	20(1)
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	0	50(3)	16(1)	16(1)	16(1)
	Pediatrics	0	50(1)	50(1)	0	0
	Other	0	0	25(1)	50(2)	25(1)
Interim measurement 2	Family Practice	0	80(4)	20(1)	0	0
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	0	40(2)	60(3)	0	0
	Pediatrics	0	33(1)	33(1)	0	33(1)
Final measurement	Family Practice	33(1)	67(2)		0	0
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	0	50(2)	50(2)	0	0
	Pediatrics	0	50(1)	50(1)	0	0
	Other	0	0		33(1)	67(2)

It can be seen Figure 21 that in the final measurement more than 60% of clinicians perceived information retrieved from AMIE saved them time when providing care.

Figure 21: Participants Responses to "Getting clinical information with the Viewer saves me time when providing care." - Interim and Final Measurements

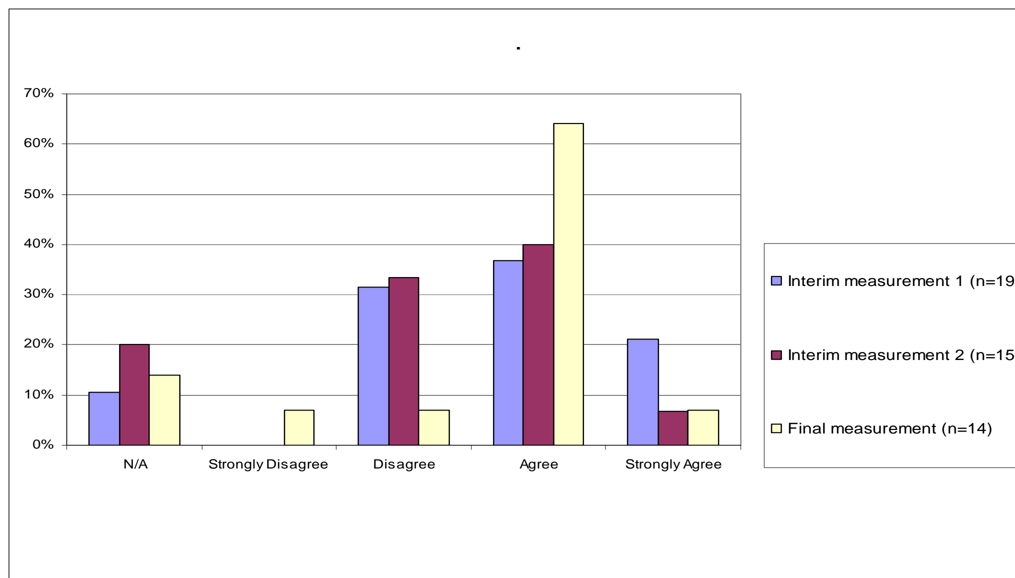


Table 27: Participants Responses to "Getting clinical information with the Viewer saves me time when providing care." - Interim and Final Measurements

		Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	0	60(3)	20(1)	20(1)	0
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	0	33(2)	33(2)	17(1)	17(1)
	Pediatrics	0	50(1)	50(1)	0	0
	Other	0	0	25(1)	75(3)	0
Interim measurement 2	Family Practice	0	66(4)	17(1)	0	17(1)
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	0	0	60(3)	20(1)	20(1)
	Pediatrics	0	33(1)	33(1)	0	33(1)
Final measurement	Family Practice	33(1)	0	33(1)	0	33(1)
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	0	25(1)	75(3)	0	0
	Pediatrics	0	0	100(2)	0	0
	Other	0	0	33(1)	33(1)	33(1)

4.1.8 AMIE and Medication Reconciliation

As shown in figure 22, most of participants had positives attitudes toward the impact of AMIE on medication reconciliation. For the three measurements, between 50% and 65% of participants "Agree" or "Strongly Agree" AMIE improved the medication reconciliation workflow.

Examples of how AMIE impacted workflow medication reconciliation were collected during focus groups sessions.

"I was able to pull out the med list with one of my resident for a very complicated patient. It was a huge help with the medication reconciliation to figure out what meds the child was already on and helped us to do better work in the medication reconciliation with the family." Pediatrician

Figure 22: Participants Responses to “Because of the Viewer, the medication reconciliation workflow at my practice setting has improved.” - Interim and Final Measurements

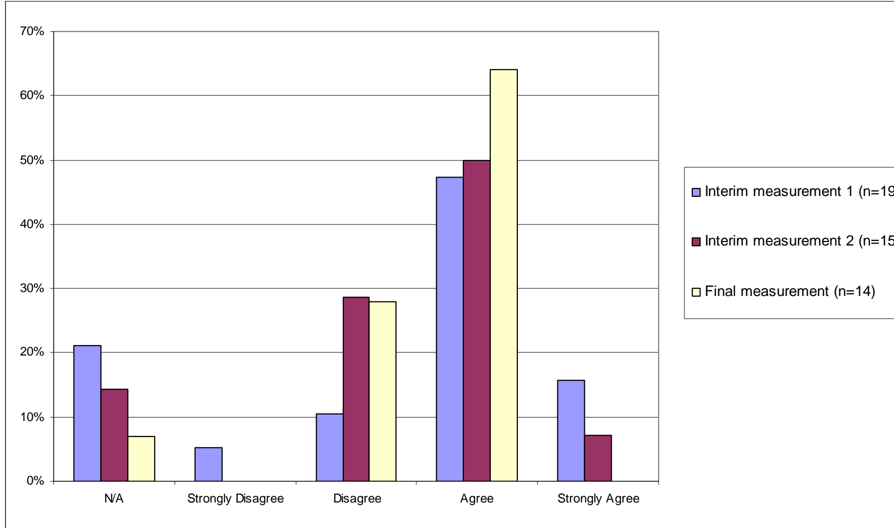


Table 28: Participants Responses to “Because of the Viewer, the medication reconciliation workflow at my practice setting has improved.” by Practice Specialty - Interim and Final Measurements

		Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Interim measurement 1	Family Practice	20(1)	60(3)	20(1)	0	0
	Emergency Medicine	0	0	0	0	100(2)
	Internal Medicine	0	50(3)	33(2)	0	17(1)
	Pediatrics	0	50(1)	0	0	50(1)
	Other	0	0	75(3)	25(1)	0
Interim measurement 2	Family Practice	0	80(4)	20(1)	0	0
	Emergency Medicine	0	0	100(1)	0	0
	Internal Medicine	0	20(1)	60(3)	0	20(1)
	Pediatrics	0	33(1)		0	67(2)
Final measurement	Family Practice	0	67(2)	33(1)	0	0
	Emergency Medicine	0	0	100(2)	0	0
	Internal Medicine	33(1)	33(1)	0	33(1)	0
	Pediatrics	0	0	100(2)	0	0
	Other	0	0	67(2)	0	33(1)

Results shown in Table 29 reflect what physicians mentioned repeatedly across all during focus groups sessions.

“Well, again, my whole thing, and I’m sure you’re working on it, let me say it that way; I would like more medication records from other healthcare plans because we have a limited AHCCCS population. We do have one, but it’s probably less than 5% of our population so it would be very helpful to have the bigger players like United, Aetna, Blue Cross Blue Shield, and be able to get that information for medication lists. And then I would really be able to say it did helped me with medication list reconciliation.” Internal Medicine Physician

Table 29: Clinicians Perceptions of AMIE's Impact on Medication Reconciliation- Interim and Final Measurements

	Month	Strongly Disagree %(n)	Disagree %(n)	Agree %(n)	Strongly Agree %(n)	Not Applicable %(n)
Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process has decreased.	Interim measurement 1	11(2)	26(5)	37(7)	5(1)	21(4)
	Interim measurement 2	0	36(5)	50(7)	0	14(2)
	Final measurement	7(1)	14(2)	57(8)	7(1)	14(2)
The medication reconciliation process is improved by using the Viewer because it provides more complete patient information.	Interim measurement 1	5(1)	11(2)	47(9)	16(3)	21(4)
	Interim measurement 2	0	29(4)	50(7)	7(1)	14(2)
	Final measurement	7(1)	14(2)	57(8)	7(1)	14(2)
Because of the Viewer, the medication reconciliation workflow at my practice setting is faster.	Interim measurement 1	5(1)	37(7)	21(4)	11(2)	26(5)
	Interim measurement 2	0	50(7)	36(5)	14(2)	0
	Final measurement	7(1)	14(2)	57(8)	7(1)	14(2)
Because of the Viewer, the medication reconciliation workflow at my practice setting is more complete.	Interim measurement 1	5(1)	21(4)	42(8)	5(1)	26(5)
	Interim measurement 2	0	36(5)	50(7)	0	14(2)
	Final measurement	7(1)	14(2)	57(8)	7(1)	14(2)

4.2 Other Findings from Focus Group Sessions

Overall, participants would recommend AMIE to other providers because it fulfilled their expectations and demonstrated to be a support tool that improves health care.

"I definitely would, even with the lack of data I think it's worth exploring but I'd give them a hundred caveats. That this is not the ultimate database, that this is just a pilot program …you just have to tell them upfront that they may only have 10% of the hits coming up with something but it's still worth checking - when it happens it's miraculous." Internal Medicine and Psychiatry Physician

"Yeah, I would recommend it for obvious reasons, just for access to a greater amount of patient information." Emergency Medicine Physician

"Without a doubt, I recommend it without reservations." Emergency Medicine Physician

Most users agreed that AMIE should be available for all health care practitioners. Emergency physicians observed the most pronounced AMIE benefits in the POC. However, interviewees also suggested including for future expansion of AMIE primary care physicians, dental care practitioners, nurse practitioners, medical assistants and pharmacists. The majority also acknowledged that it is important to increase the number of practitioners in order to observe a bigger impact in health care quality.

In general, AMIE users solicited more data. Some requested that data be included from non-AHCCCS patient plans for medication history. Others expressed that they would be satisfied with the report of emergency discharge data and radiology test results, while a few indicated that they would like to see actual images to draw their own conclusions. The majority of the focus group interviewees

indicated the need to include other lab data partners (i.e. Labcorp) as many of their patient records come from this data provider. Pediatrician AMIE users expressed that for them it would be helpful to have access to immunizations records.

"If we can get emergency room data the potential benefits would be double or triple fold." Family Practice Physician

"Right now we can't have access to things like behavioral health and HIV that are crucial to complete care. There is a huge void in denying a physician this access." Internal Medicine and Psychiatry Physician

"I think it would be helpful if ultimately this became statewide and included the primary care providers data on the list. Because our patients sometimes come to see us in addition to see doctors in other centers ... and they don't necessarily tell us nor they tell that the medications were changed there. And we don't have data." Family Practice Physician

" I would hate to be overwhelmed with a ton of information so I couldn't find want I wanted ... So what I would want from another primary care provider are... to see the diagnosis, what the problem was, their allergies and what medications the patients had." Family Practice Physician

"Something that occurs to me for lab data is that you don't need to have that exhaustive. In other words... just the most recent laboratory data on a patient would be great." Family Practice Physician

"Add more facilities to be involved to get more info... patients move from one institution to the next so it's hard to follow if not all facilities are not involved, the more facilities the better." Internal Medicine and Psychiatry Physician

Some physicians indicated, during the focus groups sessions, that they were more likely to use AMIE for: 1) patients on AHCCCS; 2) patients with complex medical conditions; or 3) patients they suspected were presenting " drug seeking" behavior. When asked what the best part of AMIE was, participants mentioned the technical aspects of the project and having additional clinical information to provide better care. Most of participants also identified the limitation in data available as the worst part of AMIE as well as the major barrier to its use. Participants expressed the need to continue operating AMIE after the POC.

By the final measurement, 78% of participants "Agreed" that the implementation of AMIE was successful.

5. Limitations

Findings of this study should be considered in view of some limitations. Participants represent a wide range of specialties; however given the voluntary nature of participation, (i.e. no random selection) selection bias may have been influenced results. The results of this study are limited by the response rate and to the clinical domain of the AMIE participants. The small number of participants in the AMIE POC may have underpowered statistical tests; p-values are not reported because none of the analyses were statistically significant (p-value equal or smaller than 0.05).

We have provided an overview of clinician attitudes of several areas involved in health care and its relationship with AMIE therefore recall bias may be present thus underestimating results. To be able to obtain more accurate measures (i.e. economic outcomes) we recommend pursuing a retrospective analysis using medical and pharmacy claims data where findings do not rely upon the physician recall process. Results from this study indicate that avoiding duplicative test (e.g. CT scans, MRI) and hospitals admissions have and immediate financial impact on health care services. Therefore future studies should examine these aspects closely. An additional consideration is that the evaluation process took place during the AMIE learning phase; some users may overcome learning barriers faster than others thus providing more positive feedback or results may differ after the learning curve.

6. Recommendations

- Increase the number of AMIE adopters, especially in emergency department and mental and behavioral health settings with the end goal of have access to AMIE by all members of the health care team.
- Increase the number of patient records and data providers, eventually expanding such that AMIE can be utilized as a statewide information sharing system for Arizona.
- Future studies should investigate the economic impact of AMIE through a controlled designed study (i.e. retrospective data base analysis with control group).
- A targeted educational effort that includes success stories from the POC may be useful to improve clinicians' adoption that present low AMIE use.
- Include Behavioral and Mental health data in AMIE.

7. Conclusion

AMIE proved to be usable and functional. It was viewed positively and some benefits were identified. However, the impact of AMIE on health care quality and costs may become more evident when more practitioners and data providers are included. Overall participants agreed that the AMIE was successful.

APENDIX A: INFORMED CONSENT FORM

Title of project: Arizona Medical Information Exchange (AMIE) Proof of Concept evaluation

Introduction

You are being invited to take part in a research study. The information in this form is provided to help you decide whether or not to take part. Study personnel will be available to answer your questions and provide additional information. If you decide to take part in the study, you will be asked to sign this consent form. A copy of this form will be given to you.

What is the purpose of this research study?

The purpose of this project is to evaluate the perceived effect on costs, efficiency and quality of care of the AIME Viewer developed by AHCCCS.

Why are you being asked to participate?

You are being invited because you belong to a select groups of physicians who will test the AMIE Viewer developed by AHCCCS.

How many people will be asked to participate in this study?

Approximately 45 persons will be asked to participate in this study over 4 months.

What will happen during this study?

If you choose to participate in the research component of this study you will be asked to:

1. Complete a 48-item survey for baseline measurement, relating to your expected benefits of the use of the Viewer. This survey is expected to take about 20 minutes to complete.
2. Complete a monthly 70- item survey relating to your experience with the Viewer. These surveys will be repeated 3 times over the 4 months study. These surveys are expected to take about 30 minutes each to complete
3. Complete a weekly web-based survey concerning your utilization of the Viewer. The web based survey is expected to take about 5 minutes each week to complete and can be completed on any computer with web access.
4. Attend to three focus groups for 45 minutes each. You will be in a group of approximately 10 health care providers and will be asked to respond to questions about your experiences with The Viewer and your perceptions and experiences using it. The discussion will be audio taped so that the researchers will be able to accurately record elements from the discussion.

How long will I be in this study?

You will be involved in the study for 4 months. However, the total time that will be needed to complete is about 6 hours.

Are there any risks to me?

No risks to participants are anticipated in this study.

Are there any benefits to me?

You will not receive any direct benefit from taking part in this study.

Will there be any costs to me?

Your time and travel costs needed to attend to the focus groups.

Will I be paid to participate in the study?

You will not be paid for your participation.

Will video or audio recordings be made of me during the study?

You will be audio recorded during the focus groups.

☐ I give my permission for audio recording to be made of me during my participation in focus group discussions.

If you do not wish to be audio taped, then you should decline from participating in this study.

Will the information that is obtained from me be kept confidential?

Your records will be confidential. You will not be identified in any reports or publications resulting from the study. It is possible that representatives from the Human Subjects Protection Program or the AHCCS may view the records, but your name will be removed before the information is released.

May I change my mind about participating?

Your participation in this study is voluntary. You may decide to not begin or to stop the study at any time. Also any new information discovered about the research will be provided to you. This information could affect your willingness to continue your participation.

Whom can I contact for additional information?

You can obtain further information about the research or voice concerns or complaints about the research by calling the Principal Investigator Terri L. Warholak, Ph.D. at (520)-235-5529. If you have questions concerning your rights as a research participant, have general questions, concerns or complaints or would like to give input about the research and can't reach the research team, or want to talk to someone other than the research team, you may call the University of Arizona Human Subjects Protection Program office at (520) 626-6721. (If out of state use the toll-free number 1-866-278-1455.) If you would like to contact the Human Subjects Protection Program via the web, please visit the following website: http://www.irb.arizona.edu/contact/.

Your Signature

By signing this form, I affirm that I have read the information contained in the form, that the study has been explained to me, that my questions have been answered and that I agree to take part in this study. I do not give up any of my legal rights by signing this form.

__________________________ Name (Printed) ________________________ Participant's Signature _____________ Date

Statement by person obtaining consent

I certify that I have explained the research study to the person who has agreed to participate, and that he or she has been informed of the purpose, the procedures, the possible risks and potential benefits associated with participation in this study. Any questions raised have been answered to the participant's satisfaction.

___________________________ Name of study personnel ____________________Study personnel Signature ________Date

APPENDIX B : BASELINE OUTCOMES QUESTIONNAIRE

Arizona Medical Information Exchange (AMIE) Proof of Concept Questionnaire

ID #______________

Directions: Using the scale provided, please rate each statement by circling the response that best describes your response.

The goal of this portion of the questionnaire is to evaluate the operability and usability of the Viewer.

1. I expect the data in the Viewer will be easy to use.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
2. I expect the data in the Viewer will be timely.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
3. I expect the data in the Viewer will be effective.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
4. I expect the data in the Viewer will be pertinent.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
5. The Viewer will help me get better patient information.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
6. The Viewer will help me get patient information faster.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
7. How often do you expect to find the information you need to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA

NA= Not applicable

The goal of this portion of the questionnaire is to ascertain the effect of Viewer components on treatment decisions.

8. Getting clinical information with the Viewer will save me time when providing care.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
9. Getting clinical information with the Viewer will decrease health care costs.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
10. Using the Viewer will decrease duplication of health care services.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
11. Using the Viewer will reduce the probability of medication errors.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
12. The quality of my decisions will improve because of using the Viewer.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
13. Using the Viewer will help me improve patient health outcomes.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
14. The efficiency of my work will improve because of using the Viewer.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
15. Getting clinical information with the Viewer will save resources for my practice setting (i.e. fax, mail, phone, calls)	Strongly disagree	Disagree	Agree	Strongly Agree	NA
16. Currently, how often do you exchange information with other providers by non-electronic means (i.e. fax, mail)?	Never	Rarely	Often	Always	NA

The goal of this portion of the questionnaire is to assess the utility of the Viewer as a decision support tool. We are interested in "drilling down" to gather your perceptions of each type of Viewer record (medication history, lab info and discharge summary). As you have seen in the Viewer demos:

Item					
17. The **medication history** data displayed in the Viewer are user-friendly.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
18. The **discharge summary** data displayed in the Viewer are user-friendly.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
19. The **lab information** data displayed in the Viewer is user-friendly.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
20. How often do you expect to find **the medication history** information you need to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA
21. How often do you expect to find **the lab information** you need to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA
22. How often do you expect to find **the discharge summary** information you need to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA
23. **The medication history** information will decrease duplicate therapy.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
24. **The discharge summary** information will decrease duplicate therapy.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
25. **The lab** information will decrease duplicate testing.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
26. How often do you expect **medication history** in the Viewer have an impact on your decision making process at the point of care?	Never	Rarely	Often	Always	NA
27. How often do you expect **discharge summary** in the Viewer have an impact on your decision making process at the point of care?	Never	Rarely	Often	Always	NA
28. How often do you expect **lab information** in the Viewer have an impact on your decision making process at the point of care?	Never	Rarely	Often	Always	NA

The goal of this portion of the questionnaire is to evaluate how the Viewer impacts the medication reconciliation process. Medication reconciliation is defined by the JCAHO as "the process of comparing a patient's medication orders to all of the medications that the patient has been taking."

Item					
29. Because of the Viewer, the medication reconciliation workflow at my practice setting will improve.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
30. Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process will decrease.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
31. The medication reconciliation process will be improved by using the Viewer because it provides more complete patient information.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
32. I feel that patient safety will improve because of using the Viewer.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
33. Because of the Viewer, the medication reconciliation workflow at my practice setting will be faster.	Strongly disagree	Disagree	Agree	Strongly Agree	NA
34. Because of the Viewer, the medication reconciliation workflow at my practice setting will be more complete.	Strongly disagree	Disagree	Agree	Strongly Agree	NA

The goal of this portion of the questionnaire is to assess technical utility training and high-level display function of the AMIE Viewer.

Item					
35. How do you rate the training you've received for using the Viewer?	Poor	Good	Very Good	Excellent	NA
36. How do you rate the support you've received from AHCCCS using the Viewer?	Poor	Good	Very Good	Excellent	NA
37. How often do you expect to use the Viewer to look for patient information?	Never	Rarely	Often	Always	NA
38. How often do you expect to print patient's Viewer records instead of looking at them on the computer screen?	Never	Rarely	Often	Always	NA

Directions: Please answer the following questions based on your experience with the Viewer.

39. What do you think will be most useful with the Viewer?

____

____

40. What do you think will be the least useful with Viewer?

____

____

41. What could be done to increase the usability of the Viewer?

____

____

42. How can we help you use the Viewer?

____

____

43. In what way do you think the Viewer will impact treatment decisions?

____

____

44. Is there any issue you felt was not appropriately addressed by this questionnaire?

____

____

Demographics

45. Age____ years

46. Do you have an academic appointment?
    Yes______ No_____

47. How many years have you practiced medicine?__________ Years

48. Before using the Viewer had you ever practiced in a setting with any type of patient's electronic records (i.e. Electronic Medical Records, Computerized Physician Order Entry, electronic prescribing)
    Yes______ No_____
    If yes please explain____
    ____
    For how long? __________ years

Comments:

____

____

____

____

THANK YOU!

APPENDIX C: MONTHLY OUTCOMES QUESTIONNAIRE

Arizona Medical Information Exchange (AMIE) Proof of Concept Questionnaire

ID #____________

Directions: Using the scale provided, please rate each statement by circling the response that best describes your response.

The goal of this portion of the questionnaire is to evaluate the operability and usability of the Viewer.

Statement					
1. The data in the Viewer are easy to use.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
2. The data in the Viewer are timely.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
3. The data in the Viewer are effective.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
4. The data in the Viewer are pertinent.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
5. As displayed, the information in the Viewer are easy to understand.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
6. The Viewer helps me get better patient information.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
7. The Viewer helps me get patient information faster.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
8. How often did you find the information you expected to find in the Viewer?	Never	Rarely	Often	Always	NA
9. How often did you find the information you needed to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA

NA= Not applicable

The goal of this portion of the questionnaire is to ascertain the effect of Viewer components on treatment decisions.

Statement					
10. Getting clinical information with the Viewer saves me time when providing care.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
11. Getting clinical information with the Viewer decreases health care costs.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
12. Using the Viewer decreases duplication of health care services.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
13. Using the Viewer reduces the probability of medication errors.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
14. The quality of my decisions has improved because of using the Viewer.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
15. Using the Viewer helps me improve patient health outcomes.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
16. The efficiency of my work has improved because of using the Viewer.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
17. Getting clinical information with the Viewer saves resources for my practice setting (i.e. fax, mail, phone, calls).	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
18. How often does using the Viewer have an impact on your decision making process at the point of care?	Never	Rarely	Often	Always	NA
19. After the implementation of the Viewer, how often did you exchange information with other providers by non-electronic means (i.e. fax, mail)?	Never	Rarely	Often	Always	NA

The goal of this portion of the questionnaire is to assess the utility of the Viewer as a decision support tool. We are interested in "drilling down" to gather your perceptions of each type of Viewer record (medication history, lab info and discharge summary).

20. The **medication history** data displayed in the Viewer are user-friendly.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
21. The **discharge summary** data displayed in the Viewer are user-friendly.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
22. The **lab information** data displayed in the Viewer are user-friendly.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
23. How often did you find **the medication history** information you needed to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA
24. How often did you find the **lab information** you needed to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA
25. How often did you find **the discharge summary** information you needed to provide care to your patients in the Viewer?	Never	Rarely	Often	Always	NA
26. **The medication history** information in the Viewer decreases duplicate therapy.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
27. **The discharge summary** information in the Viewer decreases duplicate therapy.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
28. **The lab** information in the Viewer decreases duplicate testing.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
29. How often does **medication history** in the Viewer have an impact on your decision making process at the point of care?	Never	Rarely	Often	Always	NA
30. How often does **discharge summary** in the Viewer have an impact on your decision making process at the point of care?	Never	Rarely	Often	Always	NA
31. How often does **lab information** in the Viewer have an impact on your decision making process at the point of care?	Never	Rarely	Often	Always	NA

The goal of this portion of the questionnaire is to evaluate how the Viewer impacts the medication reconciliation process. Medication reconciliation is defined by the JCAHO as "the process of comparing a patient's medication orders to all of the medications that the patient has been taking."

32. Because of the Viewer, the medication reconciliation workflow at my practice setting has improved.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
33. Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process has decreased.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
34. The medication reconciliation process is improved by using the Viewer because it provides more complete patient information.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
35. I feel that patient safety has improved because of using the Viewer.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
36. Because of the Viewer, the medication reconciliation workflow at my practice setting is faster.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
37. Because of the Viewer, the medication reconciliation workflow at my practice setting is more complete.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA

The goal of this portion of the questionnaire is to assess technical utility training and high-level display function of the AMIE Viewer.

38. How often did you use the Viewer to look for patient information this week?	Never	Rarely	Often	Always	NA
39. On average, how often are you able to log in to the Viewer on the first try?	Never	Rarely	Often	Always	NA
40. How often did you find data inaccuracies in the Viewer records **overall**?	Never	Rarely	Often	Always	NA
41. How often did you find data inaccuracies in the Viewer **discharge summaries**?	Never	Rarely	Often	Always	NA
42. How often did you find data inaccuracies in the Viewer lab **information**?	Never	Rarely	Often	Always	NA
43. How often did you find data inaccuracies in the Viewer **medication history**?	Never	Rarely	Often	Always	NA
44. How often do you print patient's Viewer records instead of looking at them on the computer screen?	Never	Rarely	Often	Always	NA
45. If you printed a record, how often did it successfully print?	Never	Rarely	Often	Always	NA
46. How often did you use a new window to compare multiple records at once?	Never	Rarely	Often	Always	NA
47. Which search option did you use the most?	AHCCCS ID search	Name search	____	____	NA
48. When you use the Name search option how often did you find your patient?	Never	Rarely	Often	Always	NA
49. When you use the AHCCCS ID search option how often did you find your patient?	Never	Rarely	Often	Always	NA
50. How often did the search options provide you direct patient "hits" for the patient you were searching for?	Never	Rarely	Often	Always	NA
51. When using the Name search which of the (4) fields did you use **most**?	Last name	First name	Date of birth	Gender	NA
52. When using the Name search which of the (4) fields did you use **2nd most**?	Last name	First name	Date of birth	Gender	NA
53. When using the Name search which of the (4) fields did you use **3rd most**?	Last name	First name	Date of birth	Gender	NA
54. When using the Name search which of the (4) fields did you use **least**?	Last name	First name	Date of birth	Gender	NA
55. Attesting your relationship to a patient each time is a good way for ensuring privacy.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
56. The password setting process for the viewer is logical	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
57. The implementation of the Viewer was successful.	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
58. In general, when you looked at the VIEWER and reviewed patient data, what did you do with it? **Circle all that apply**.	Viewed on line	Viewed and made notes in facility chart	Printed information	Other	NA
59. The system logs the user out after 15 minutes of inactivity. This is…	Too short	Just right	Too long	____	NA

Question					
60. How do you rate the training you've received for using the Viewer?	Poor	Good	Very Good	Excellent	NA
61. How do you rate the support you've received from AHCCCS using the Viewer?	Poor	Good	Very Good	Excellent	NA
62. How often do you have technical difficulties using the Viewer?	Never	Rarely	Often	Always	NA
63. How often do you have technical difficulties searching the information in the Viewer?	Never	Rarely	Often	Always	NA

Directions: Please answer the following questions based on your experience with the Viewer.

64. What did you find to be most useful with the Viewer?

____

____

65. What did you find to be the least useful with Viewer?

____

____

66. What could be done to increase the usability of the Viewer?

____

____

67. How can we help you use the Viewer?

____

____

68. What additional clinical information would you recommend adding next to this Viewer?

____

____

69. In what way did the Viewer impact treatment decisions?

____

____

70. Is there any issue you felt was not appropriately addressed by this questionnaire?

____

____

Comments:

____

____

____

____

____

THANK YOU!

APPENDIX D: PROVIDER FOCUS GROUP DISCUSSION GUIDE

1. Completion of paper based survey [10-15 minutes]

2. Introductions [5 minutes]

3. Facilitated Discussion [35-40 minutes]

Welcome, and we'd like to thank you for coming today. My name is Dr. Terri Warholak, and I'm accompanied by Ana Hincapie. I am a faculty member at the University Of Arizona College Of Pharmacy and she is a graduate student from the same department. As you know, we would like you to share with us more specific experiences you have had using the Viewer, so that, we will be able to have insightful feedback of this tool…

Because we are very interested in exactly what each of you have to say, this discussion will be recorded on audio tape. I want to make certain that everyone agrees with this. [*Review consent form out loud; address any questions, have participants sign a copy, and collect the signed copies.*] [Moderator will make notes next to each participants name to guide further discussions]

Okay, let's get started with our discussion. I'm going to turn on the recorder.

Possible questions:

Expectations

1. What are the potential benefits of the viewer?
2. So far, has the Viewer fulfilled your expectations? Why/why not?
3. What else – if anything - do you want from the viewer?
4. What are the barriers to using the viewer?

Outcomes experienced thus far

If you have not already mentioned it…

5. When has the Viewer been most beneficial to you? Why?
6. What impact has the viewer had on your clinical decisions so far? Examples?
7. How has the viewer impacted the quality of your work? Examples?
8. What impact has the viewer had on patient safety? Examples?
9. What about efficiency? Please provide examples.
10. Do you think the Viewer decreases or increases health care costs? How?

Work flow

11. How have you integrated the Viewer into your work flow?
12. Are you more likely to use the Viewer for a certain type of patient? What type?

Expansion to other providers

13. Would you recommend the Viewer to other providers? Why/why not?
14. What other types of health care practitioners need access to the Viewer?

Recommendations for AHCCCS

15. What other information is important to include in the Viewer?
16. What could AHCCCS do to increase the usability of the viewer?
17. What should AHCCCS's next steps be?

Best and worst

18. So far, what is the best thing about using the Viewer?
19. So far, what is the worst thing about using the Viewer?

Conclusion [5 minutes]

Now I'd like to give our AHCCCS observers the opportunity to ask any additional questions. As we finish, what else would you like to say about this topic that you have not had a chance to say already? Any concerns, challenges, or expectations we have not discussed? Thank you very much for your participation today. Your views and experiences you've shared with us will be a great help as we work to improve the Viewer and we very much appreciate your time. Will see you next month!

APPENDIX E: PROVIDER FOCUS GROUP DISCUSSION SUMMARY

AMIE Facilitated Information Gathering Session 1		
	Main Points	**User Quotes**
What are the potential benefits of AMIE?	1. Reduction in medication errors 2. Decreasing duplication of medical services 3. More efficient doctor-patient interaction 4. Making better and faster decisions 5. Preventing drug seeking behavior and diversion 6. Getting information about recent admissions 7. Having access to patient medication history	1. Ultimately this could be probably the most crucial intervention to revolutionize our health care in the state. Dr. Sisley, Internal Medicine 2. If we can get emergency room data the potential benefits would be double or triple fold. Family Practice 3. It supports continuity of care Internal Medicine 4. It's a way of reducing the abuse of opioid medications and some others that are abused as well. Dr. Christopher, Emergency Medicine 5. I think the potential is massive, from my practice it has not yet been realized. Dr. Brown, Family Practice
What additional information should be included in AMIE?	1. More facilities e.g. Children's hospitals 2. More patient records 3. Lab data from other institutions 4. CAT scans results 5. More data partners (e.g. Labcorp) 6. Radiology reports 7. Emergency room discharge summaries 8. Medication history data should be more timely and sorted from the most recent to the oldest.	1. Real time data would be awesome or close to it. Dr. Christopher, Emergency Medicine 2. I'd like a picture of the patient, because there is a huge amount of medical fraud. Emergency Medicine 3. … If we could make AMIE more universal and have other patients from other plans it would definitely be the biggest benefit for me. Internal Medicine 4. I think it would be helpful if ultimately AMIE became statewide. Dr. Williamson, Family Practice 5. I would really love to see the pharmacy piece expanded outside of AHCCCS. Internal Medicine
Has AMIE fulfilled your expectations?	1. Functionally, it has fulfilled expectations.	1. I think it sounded a lot better than actually it has been in practice because a lot of the data we expected to be in the Viewer isn't there yet. Internal Medicine 2. I'm definitely a fan, I think it's useful. Emergency Medicine
What are barriers to Using the viewer?	1. Time 2. Lack of information 3. One more password to remember and another program to use 4. 4. Getting doctors to change their behaviors	1. It is definitely user friendly. It's just the information is not there. Internal Medicine

AMIE Facilitated Information Gathering Session 1		
	Main Points	**User Quotes**
What benefits have you realized with AMIE?	1. It helps to sort out the patient medications. 2. Several have identified several cases of “doctor shopping” and drug seeking behavior that resulted in positive clinical and financial outcomes. 3. Access to a discharge summary averted a cardiac evaluation which is estimated savings of~US$8,000 4. It clarifies treatment plan. 5. It verifies what patients tell the provider about what has happened over another hospital.	
Could you give us examples of how the Viewer impacted efficiency of your work?	1. Overall, it improves it.	1. I can very efficiently get on and query on a patient I wish to, and I don’t have to spend a lot of time messing around, it saves me time. Emergency Medicine 2. It used to take a week or 10 days to get us information from the hospital, so AMIE definitely improves efficiency and patient care. Gastroenterology
What impact does the Viewer have on your clinical decisions?	1. When medical records have information, better decisions can be made 2. Many repeated not ordering test if they are already done. 3. A few providers reported avoiding ordering duplicative CT scans.	1. Not a lot yet. I haven’t found a lot of information on. Pediatrics 2. Duplication of tests and medications would be totally eliminated. It won’t take much to pay for itself it is my guess. Internal Medicine
Do you perceive that patient safety is improved with the Viewer? In what way?	1. AMIE has enabled clarification on antiepileptic drugs 2. Patients exposed to less radiation (less CAT scans). 3. Allergies to be identified 4. Drug interactions to be avoided	1. “There was a patient who had a MAO inhibitor and I had no idea. You know how many drugs interactions that has. It caused a very productive chain reaction where I was able to contact all her consultants to make them aware. So we could make sure that this patient was safe and she was adherent to the dietary restrictions.” Physician, Internal Medicine

<table>
<tr><th colspan="3">AMIE Facilitated Information Gathering
Session 1</th></tr>
<tr><th></th><th>Main Points</th><th>User Quotes</th></tr>
<tr><td>In why way do you think the Viewer does decrease or increase health care costs?</td><td>1. Some reported AMIE decreases health care costs because avoids duplication of medications and lab tests.
2. Others reported unknown at this point.
3. It is not necessary to print patient records with the Viewer.</td><td>1. Conceptually, I think it will decrease health care costs. Emergency Medicine
2. I think it could decrease health care costs if we can get it up and running timely. Family Practice</td></tr>
<tr><td>Describe how you have integrated the Viewer into your work flow?</td><td>1. AMIE is easy to incorporate
2. Some users look at AMIE before seeing the patient in the room.
3. Some users look at AMIE when the patient is still in the office.
4. Some users look at AMIE at the end of day or with residents.
5. A few indicated AMIE was not frequently checked because the information they are seeking has not been found.</td><td>1. It's part of my natural workflow now. Emergency Medicine</td></tr>
<tr><td>Type of patients searched on the Viewer</td><td>Patients that:
2. are on AHCCCS.
3. report being in another institution
4. have complex medical history
5. present drug seeking behavior
6. are chronically ill
7. have multiple medical problems
8. are poor historians</td><td></td></tr>
<tr><td>Would you recommend the Viewer to other providers?</td><td>1. Some user recommend AMIE because data present are helpful
2. A few indicated they do not recommend AMIE until more data are available.</td><td>1. Without a doubt, I recommend it without reservations. Emergency Medicine
2. I recommend it; I hope you keep doing what you are doing. General Surgery
3. This is a great thing, you need this thing keep rolling. General Surgery</td></tr>
<tr><td>What other providers need access to the Viewer?</td><td>1. Office staff
2. Primary care practitioners
3. More providers of the same type (ED, associated clinicians)
4. Pharmacists</td><td></td></tr>
<tr><td>Usability</td><td>1. Change the search function so one can pull multiple patients at the time instead of having to search each one.
2. Should be integrated with an EMR
3. Users indicated AMIE is fast.
4. Users indicated AMIE is easy to use.</td><td></td></tr>
</table>

AMIE Facilitated Information Gathering Session 2 and 3		
	Main Points	**User Quotes**
What additional information should be included in AMIE?	1. immunization records 2. dictation notes 3. non-dictated discharge summaries	1. The notion that we can't have access to things like behavioral health and HIV is a barrier to complete care. There is a huge void in denying a physician this access. Internal Medicine
Has AMIE fulfilled your expectations?		1. The viewer itself is very easy to use and has exceeded my expectations; the amount of information contained in the Viewer has been less than my expectations. Family Practice 2. I think it's getting better. Internal Medicine
What are barriers to Using the viewer?	1. Lack of patient information loaded at this point (e.g. Labs)	1. I think the major barrier is that probably 90% of the time we don't find any useful information on a given patient so there's less of an incentive to go looking. Family Practice
What benefits have you realized with AMIE?	1. AMIE can increase the provider's trust in patient reporting	1. I was concerned whether this patient was taking medication from other providers and it confirmed that they were not, so it helped me to trust the patient more. Family Practice 2. To have something that helps and prevents future drug abuse is amazing. Emergency Medicine
In why way do you think the Viewer does decrease or increase health care costs?		1. It needs to be magnified and scaled up. You avoid a tremendous amount of duplication by having AMIE. Emergency Medicine

APPENDIX F: PROVIDER FOCUS GROUP DISCUSSION TRANSCRIPATIENTS

Date: Interim measurement 1, 2008
What: PHONE INTERVIEW WITH DR DIRLAM

She has been out of the office for the last 12 to 14 days…

1. What are the potential benefits of the viewer?
I was most exiting about getting laboratories that other physicians have ordered and second DC from other than Banner. And lastly, since the pharmacy piece is only for AHCCCS patients and since my AHCCCS patient population is relatively small that would have been the third thing I was really looking for.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
No. I think that in any project beginning it's obviously hard to get the expectation is wanted and that is labs…Before my vacations I would checked for labs probably two or three times a day for labs that labs that were done after September 29 and did not find much. This was frustrating. I did not have patients admitted to the hospital so I really I cannot say anything about that. I did use the pharmacy data for an AHCCCS patient, which was very beneficial. I ended up calling AHCCCS and having her notes put on chart for some things that she was doing. Basically Dr. Shopping and getting narcotics, very helpful and that one instance. This particular patient had been either seen by five physicians or had screening by physicians. What came to our notice…I mean she is a very nice young lady I met her with one of the residents and what came to our notice is that she…someone called in pretending they were a pharmacist and asking for the DEA number of my residence and she came back showing us a prescription that had all this …fakes that had …she spilled perfume on the DEA number and obviously we basically thought that…I got all information I needed from AHCCCS. She was getting 20 or 30 every 2 or 3 days from variety of physicians. Patient was discharged from the practice. MD will send case info to Lindsey.
From my standpoint that is wonderful…The pharmacy piece…If we could make that more universal and have other patients from other plans it would definitely be the biggest benefit for me. That's the biggest question we have…Our patient is being compliant and where…seen.

3. What else – if anything - do you want from the viewer?
It would be helpful to be able to get reports…radiologic reports at issues with that from various facilities. That would be vey very beneficial. Also having Labcorp on there would be very beneficial. There is a lag time about a week prior to us even getting the lab re-ordered. Although I do think having an electronic…it does not work that quite the way that the Sonora Quest mode works. The Sonora Quest's is very slick. Having all that in one place would be great.

4. What are the barriers to using the viewer?
Lack of information

Terri asked: Are there any like work flow barriers that you encounter?
Dr Dirlam: Oh no Not really. Nothing that I wouldn't expect with the new product.

5. When has the Viewer been most beneficial to you? Why?
Only when we found a Dr. Shopper I already mentioned it. That one case, that's the only time it has been benefit.

6. What impact has the viewer had on your clinical decisions so far? Examples?
It's very powerful. We dismissed a patient from a practice and we contacted AHCCCS. We found the Dr. Shopper.

7. How has the viewer impacted the quality of your work? Examples?
Not really.

8. What impact has the viewer had on patient safety? Examples?
Just finding the Dr. Shopper

9. What about efficiency? Please provide examples.
It probably slowed us down and the fact…that you know we had to gather the information one of our MAs was really sharp. She cut wind of what was going on. She is the one that began to this search. Who is this pharmacist, she made phone calls to get the numbers, to this presume pharmacy which ended up being somebody's personal phone. She came to me; I got on the viewer, found out. I got her chart then I found out who I needed to call in AHCCCS then we had to write a letter, so you know in that it really decreased our efficiency.

We looked at what we might have gone; it might have happened, in the future less calls requesting medications. Following up maybe issues that the patient had gotten with the DEA number and it probably could save us some time in the future but it is really hard to quantify for you because it is unknown that you know from the practice stand point probably did save us in a long run but did increase in that particular day.

10. Do you think the Viewer decreases or increases health care costs? How?
Decreases, because less repetition of what work other physicians have ordered, in the future when everything is up and running it will decrease health care cost.

11. How have you integrated the Viewer into your workflow?
It's on my favorites – thinking about putting it on my desktop –. Once I'm using it more which means I'm getting back from the viewer that there are things that I need…it will probably go into my desktop.
I think that once the labs are there that will probably…Because it is frustrating to call and have you know Dr. X say on faxing it over and not getting it in time to either do patient care or you now that black hole that I swear exits in the universe where all the faxes go because I know…
So I think once that's smoothed out on the labs I am going to be more likely to use it.

12. Are you more likely to use the Viewer for a certain type of patient? What type?
AHCCCS patients, in that one case to me that was a real benefit really benefit I can't emphasize that enough. I think, in thinking in the future my impression would be I will be more likely to use it in those patients who see multiple subspecialists or probably in patients that are chronically ill with multiple medical problems would be the patient I'd be more likely to use it in.

13. Would you recommend the Viewer to other providers? Why/why not?
Oh definitely, once things are working out I think it would be more benefit.

14. What other types of health care practitioners need access to the Viewer?
I think the pharmacy piece would be very powerful, the radiologic piece would be excellent. You know…if something where information could be traded electronically concerning notes from specialist. I had this really great cardiologist, when he was not so busy, who would give me a 24 hours turnaround time of transcription, it would come to email. I would have the notes so when my patient came in and after seeing him I could sit down with my patient and explain what went on why the cardiologist was possibly doing what he was doing. Because our biggest problem with subspecialist is a lot of times they have difficulty bringing the subspecialty to the level that the patient understands. And with this particular cardiologist it was great I would have the note I would say the patient, say what was done, what the results were. I would see… If you could have that kind of system, where the subspecialist would transcribe it would go into your data base where I could pull of…that kind of information had would be a wonderful situation because everyday even today I saw a patient…two or three patients I saw this morning said had you gotten my notes from my cardiologist? Can you tell me what he thinks? And that is one of the things that primary care physicians we try to do very well is to form that bridge…that would be something I would see in the future. If you could have something like that, it would be very beneficial.

15. What other information is important to include in the Viewer?
Information from the sub-specialists would be excellent because we're all going electronic…and somehow we can tap that on demand would be great

16. What could AHCCCS do to increase the usability of the viewer?
Nothing, I don't find the usability difficult I would say nothing.

17. What should AHCCCS's next steps be?
Get the pieces that need to be on there, which it sounds that is happening I mean I would really love to see the pharmacy piece expanded outside of AHCCCS because I can figure out ways to get the labs and it may be, maybe cumbersome but I can get them. Getting the pharmacy piece is so difficult I can't tell you how difficult and how we fight on a daily basis with all of our patients. We don't know if they are using medication correctly or incorrectly some of the health care plans will send us the summary of patients that they think may not be using medications as prescribed you know this is supposed to begin monthly but he's getting every three moths…that is kind of something to pick up but we really don't have much more than that as a practitioner have pharmacy piece is so key.

18. So far, what is the best thing about using the Viewer?
The medication that I was able to get…that was really wonderful.
The ability to find the medication shopper

19. So far, what is the worst thing about using the Viewer?
Not being able to get info on labs is the most frustrating.

COMMENTS
This is a great process – I love the fact that the capability is coming. The frustrations in here are not big…big at the time…make it here. As soon as things get work out I'll be using it more and more.

Date: Interim measurement 1, 2008
What: FOCUS GROUP WITH:

A. Dr. Brown
B. Dr. Hamadei
C. Dr. Peterson
D. Dr. Hsu
E. Dr Kaplan

1. In general, what do you think so far of the potential benefits of the VIEWER are?

D. knowing what medications patients are on…. I found several patients that were supposed to be picking up drugs and we can see these gaps where they had the drugs. Picking up the medications for diabetes or hypertension. It is something you can call them off… otherwise they would just say oh yes… I take them everyday. Now I can show them… print out the list and say these is what we have here.

C. med list is only thing I have been able to pull up so far.
And I think so one benefit patient that can remember I was concerned about a patient that was maybe overusing that I can remember is, one patient that may be over-using or getting's meds from multiple source and I think the question that I still have… I think the medications come trough benefit plan so if they are paying out-of-pocket then we won't have that information.

B. I haven't had any positive queries so far.

A. I think the potential is massive, from my practice It has not yet been realized same way. I only have been able to pull of medicines, agree with D and C. Our health care system in general is drastically terrible. Communication between hospitals, between systems between everything is like…any effort that somebody is making on that to try to improve that is very important.

B. I think that we use the term potential as supposed to be realistic ….The potential is huge. The fact that the DC Info is… you know. I don't know… in my instance speaking as a pediatrician, many of patients aren't at these other hospitals that are part of this program now. There is not that much data in the exchange yet so… Potential is huge, but not really using it.

E. I would agree also. When I have logged on a couple of times most patients are AHCCCS, but for patients who aren't in AHCCCS, it's difficult. Big to find drug abusers, helpful with this info available
Other patients that aren't part of Banner hospital base, difficult to find other info

2. Potential barriers of the Viewer

D. Most of the time, about 70% of time or even 80, nothing comes back… so that is the biggest barrier, when nothing comes back. It is discouraging and makes people not want to use it if info isn't coming back. I haven't had any hit with Sonora at all and I know that the tests are done, so and then I use the regular Sonora and I have to wait few days to come so I 'm not sure what the delay with the labs are and with DC. I haven't had a bunch of people admitted to Maricopa or Banner.

A. I think the biggest barrier is getting doctors to change their behaviors. I've been reading studies you get medical doctors Electronic Medical Records and takes forever for them to incorporate into the practice and something when you are asking people to do is really to change their daily routine and it is true that there is...

E. At our hospital, we use 6 different programs from different places to get all the info… one program to access all of this info is good (unified/integrated system), but if you're searching and can't find info, then useless and discouraging.

C. Anything after Aug 25, can't access medications??
Staff won't look up anything unless I direct them to…
Want staff to do it automatically and look up things independently. →Clarified per Perry

D. Definitely med list from APIPA are delayed for sure!
Printing med list is kind of complicated--right-click something or else, get a blank sheet. Need to find small print symbol to do it→ training issues. That is the only way you get to print… it's really small.

B. From my perspective, I'm a hospitalist so my patients are captive the whole day. I have time during my day to manage … so when I go to the viewer I can choose when I go to do it but I can see from my stand point that I can manage what I'm going to do and possibly do all the patients at one time sitting down…pace of day is a barrier to even take a few minutes out to look up info unless you had staff to do this for you…this can also be a barrier for output settings too. If you don't get positive inquiry for at least 75% of time, then it is not really worth my time.

3. What do you want from the VIEWER?

B. The type of info you guys have I think is god, DC summaries are beneficial but few of my patients go to Sonora quest

A. We have the opposite; all my patients go to Sonora Quest so I already have all that information. So is not going to save me any time.

C. Do you have access to them or do you need an order from the specialist? → no

E. I think to have lab data from other institutions besides …savings because able to see lab data from DC summaries from other institutions…and Radiology reports.

4. So far, has the VIEWER fulfilled your expectations?

E. No personally, because no info get out of it personally.

D. Difficult to get back into in when don't get positive feedback first few times of trying but it's pretty easy to use.

5. Best of all worlds, if VIEWER worked exactly how you wanted it to, then how would it affect your clinical decisions??

E. It would be great! Potential to save time, to do patient care, more efficient, costs, make patients care more efficient and better.

D. It saved time to order HA1C for a patient…

C. I think DDI's, the other part that would be important to know, whether they're getting other meds… they're paying out of pocket.

A. I think the potential impact is massive the American healthcare system is so inefficient and duplicative, that appreciate any effort to improve that, when you look at the Institute of Medicine six recommendations for making health care better one of them is inefficiency when you order the hemoglobin that was already ordered two weeks ago that is inefficiency, i.e. admitting someone for something they were treated already, duplication of labs, CT scans, tests, etc.

E. Duplication would be totally eliminated. It won't take much to pay for itself it's my guess.

6. Has it had any clinical impact?

A. It has had very little impact

C. and E. impact to identify drug seekers

Give examples of how VIEWER has impacted quality of work?

All→ same examples mentioned above

7. If VIEWER had all info you wanted, what would be …in patient safety?

D. knowing what meds patients are on… i.e. patient on amiodarone but doesn't know or remember to tell you, and look at T4 levels. I think medication errors, having baseline labs sometimes also helps.

E. drug allergy info is important for patient safety…especially if they don't remember.

B. make sure to check and reconcile the info on the list…thinking that all info is current when info isn't…. thinking that if something is computer generated, then it's all right…

E. helpful to get behavioral-psych list stuff too

C. get administrative info, in regards to what meds are covered under patient insurance plan… to know if med was denied, so know if patient is getting it filled or not that would be helpful for me…I can see medication errors being still likely to happen because all meds that are paid by the patient won't show up.

8. Describe how you have integrated VIEWER with workflow

C. not working well, but do it by myself sometimes…I don't do it routinely.

D. I do it at the end of the day or when working with the residents. One resident was exciting about the viewer he said Oh it's pretty neat…that somebody's trying to do this.

A. I do it when it has potential to impact my practice…if prescribing narcotics, then can check stuff…not necessarily integrate into workflow but use it when think it will be beneficial for that case.

E. not yet in workflow, over time but if there is lots of positive feedback then maybe I will use it more frequently and work in.

C. Agrees with E.

9. More likely to use it for a certain type of pt than another

D. more for AHCCCS pt since med lists are available for them

E. nice to know that DC summaries and everything other than med list are available for non-AHCCCS patients too. Also DC summaries should be coming for everybody.

A. more likely to use it on patients who have told me they've been in the hospital.

10. When was VIEWER most beneficial to you?

ALL→ meds and as mentioned above

11. What to do to increase usability

A. thinks its very user friendly…easy to search and navigate.

D. search engine…requires at least 4 characters, or 3 parts of info… you need to type in at least 4 of each…tougher because normally use to putting in bare minimum in search and get list.

12. Would you recommend VIEWER to other providers?

D. when more info is available in program…not yet

C. Agrees with D.

13. What other practitioners will need access to VIEWER?

E. NP and PA's

A. Medical assistants

Dr. Murko- lab techs

E. Pharmacists may find it helpful.

14. In what ways do VIEWER increase or decrease healthcare costs?

D. It doesn't really increase costs…

E. Spending fair time on the program with little return.

15. So far, what is best thing of VIEWER?

C. medication list

D. log on is easy.

E. functionality is easy…navigation is pretty easy.

16. So far, what is the worst thing about using the Viewer?

E. everyone said→ not enough info available

17. What additional info would you add into program?

E. add more facilities to be involved to get more info…patients move from one institution to the next so hard to follow if not all facilities are involved. The more facilities the better

C. more labs

A. if serving this kind of underserved population, need info from different places…i.e. Chandler, Mesa, etc.

18. What is AHCCCs next step?

Getting other hospitals on board

Date: Interim measurement 1, 2008
What: INTERVIEW DR SUSAN SISLEY

1. So far, has the Viewer fulfilled your expectations? Why/why not?
I think I loved the concept, it just sounded so exciting that we would have access to a centralized database where we could take look at it, that we would have that type of information at our finger tips but I didn't really know what to expect in term of how it would affect work flow and I think it sounded a lot better than actually it has been in practice because a lot of the data we expected to be in the Viewer aren't there yet there that's my only frustration.
I still love the concept I still advocate for this model I would ….do whatever we can to get our partners in, because, I think that is the biggest challenge now the data are too limited because we have such a narrow... I know you guys… wide net but these other partners haven't come on board and we need to pressure them for example Labcorp, the notion that Labcorp has not stepped up on …is really an aggravation because most of my patients use Labcorp so for me to go and look up is a waste of time and it is frustrating because I can't get the info …when I did get access to lab data was incredibly….and….I mean it was awesome and so useful and I was able immediately to eliminate the need for the patient to redo certain labs and answer all the questions I have about what the TSH was you know all that stuff. When it's there it is phenomenal but when it is not there it creates so much aggravation.

2. What are the barriers to using the viewer?
The biggest barrier is being demoralized by the lack of data so I can tell you that probably only 5% of my searches come up positive so that is real…because a lot of my patients are…First of all they are not AHCCCS so that already eliminates me from the medication list so the view that worked I did get med list but the med list was inadequate they only had often one pharmacy listed but not others you know it's really weird they only listed Wal-Mart maybe a prescription for hydrocodone but yeah I know they are in 10 other meds from another pharmacy…so what's going on? Why is this incomplete? I think the biggest challenges if we are going to get providers excited about using this…we have to make sure that at least 50% of the time we're getting a positive hit for something. It doesn't have to be everything…like the discharge summaries are pretty worthless for me because I'm doing outpatient medicine it's very rare that my patients ever get admitted .so DCs don't help me anyway and often times that's the only hit I get and plus it's from County or St Joseph and I'm taking care of patients all over the state and I would just need to get all this hospitals on board. We desperately need everybody participating and we need to continue pressuring them until they feel like they're being …They are not part of this you know. Potential barriers you see.

3. In general, what do you think so far of the potential benefits of the VIEWER are?
I think that ultimately this could be probably the most crucial intervention to revolutionize our health care in the state.
If we could just get all the partners on board this could possibly improve patient safety by …Save people from getting stuck over and over again for no reason and it would just really improve our decision making. Every time I get a hit it fulfills my expectations tremendously, it is very victorious. But the notion that only 5% percent of the time I have a positive search it's very problematic and that is why I literally stopped checking the viewer last week. Because I feel there is so much data that still needs to be loaded and it's not until l we overcome that inertia. It's not worth my time I feel like I'm wasting time now checking, doing searches that are unfruitful.

5.
The best situation would be I would log on in the morning that I wouldn't log me out every 15 minutes and I could leave my computer on all day the one where I'm typing my EMR and I could just consistently as each patient comes in I could look up the data and have all those elements there and ready to be accessed and ready to be used and be part of my decision making for each patient. But that's not remotely the case now. But the concept just the fact that the concept is there and it happens even 5% of time for me it's incredibly exciting really you can see the potential here, whatever we have to do to harass these other partners to come on board…I'm ready to do it specially Labcorp.

6. What impact <u>might</u> the viewer have on your clinical decisions?
When searches are fruitful, it does have a tremendous impact because I am able to see…to make sure I'm not duplicating labs, duplicating meds, it' just really helps in everything. It enables me to know what other providers the patient's seeing, because often they don't know that.

7. Could you give us examples of how the viewer impacted quality of your work? What about efficiency?
When searches come up then quality improves, because I got information I didn't have normally, I rely on the patient to give me whatever material they have and usually they barley know how to pronounce their meds…much less what dosing they are on. So it saves me time, more efficient when the search comes up as positive because I know the meds they are one, what dosages, and what the docs are.

8. Do you perceive that patient safety <u>is</u> improved with the Viewer? In what way?
If I would have comprehensive pharmacy data not just like isolated pharmacy data. I don't know why is that happening but happens enough time that is concerning. If we have truly comprehensive statewide data on patients, med list specifically and if we had more than just DC summaries although that was a good start but any additional material related to clinical care is just going continue to improve our decision-making.

9. How have you integrated the VIEWER into your work?
It's on my computer but the lack of positive searches and need to log on all the time, makes it a low priority. If I was getting hits all the time I would be checking in all the time even if I had to log on every 15 minutes. But the combination of those two negatives makes it not desirable to use frequently.

10. Are you more likely to use the Viewer for a certain type of patient? If so, what type?
I'd use it across the board if I had the feeling that more than 50 % would come up positive I would use it in every patient.

11. When will the Viewer most benefit to you? Why?
Every positive hit was beneficial in some way…Warning me about meds I wasn't aware the patient was on. There was a patient who had a MAOI inhibitor and I had no idea and you know how many drugs interactions that has. That caused a very productive chain reaction where I was able to contact all her consultants to make them aware so we could make sure that this patient was safe the she was adherent to the dietary restrictions. This is an elderly patient we had been on for years and she never discussed this. When she brought the med list, it wasn't even on there that was a big issue.

12. What can increase use of VIEWER?
I think the governor seriously should put out an executive order mandating that every health care partner be part in this viewer and if we can demand all the pharmacies be part of this controlled substances pharmacy program why can't they be mandate them to be part of this? Everybody has to play nicely with each other because otherwise this is only, this is all about patient safety and we can't get everyone to come on board we won't be able to get all health professionals that need to bid in to make this really attractive. All of our colleagues are technophobic if they get a bunch of hits that don't produce anything we are just going to lose them. We have to make sure that this thing is totally slick to keep them excited about it.

13. Recommend to other providers?
I definitely would, even with the lack of data I think it's worth exploring but I'd give them a hundred caveats. That this is not the ultimate data base, that this is just a pilot program they don't think…you just have to tell them upfront that they may only have 10% of the hits coming up with something but it's still worth checking when it happens it's miraculous.

14. Other people who might find use of this program
I would say pretty much anyone who is involved in patient care. All the people that you mention should have a chance to review that even if they are not prescribers. I have patients who are working with a therapist. In order for them to support the treatment plan they need to know what the meds are. So I'd say it would be nice to expand to include therapists, case managers, other part of the treatment team that are not necessarily prescribers.

15. Cost→ do you think VIEWER may affect cost?
When it comes to costs the full…of data, it's definitively going to reduce cost because everybody…I didn't print a single thing. It was terrific that I could any time…I just took the data I learned from there noted it on my own EMR. This enables people to have a complete capable office, the only paper I gets every day is from all those consultants who don't want to adopt EMR. I keep having to maintain a fax just for these folks and I think is time for everybody to step up and have electronic interfaces stop waiting…killing all these trees.

16. So far, best thing?
Triumphant feeling when able to find data that will help adjust clinical decisions
But needs to happen more frequently to keep providers on board

17. Worse thing?
Inability to find info when searching…discouraging

18. Improvements on next VIEWER?
No, I don't need you guys to expand the viewer that much. Even if you just carried out this material but did it in a completely comprehensive way where we had all the med lists from all pharmacies we had for all patients whether is AHCCCS or not. If Just we constraint in these three areas but make them fully statewide and fully every hospital on board then it would be a tremendous achievement.

19. What is AHCCCs next step?
I would say the governor and the health department, everybody needs to step up and endorse this thing and put pressure in all the partners to come and fully participate.

COMMENTS
Maybe get someone from the House of Med to write a letter to governor to get them to endorse this.
Educating others about this program→ comprehensive campaign
This pilot program is too limited to just 40 docs…Extend that as soon as possible.
Maybe get a PR firm to get involved…get lay public involved too.

Date: Interim measurement 2, 2008
What: INTERVIEW WITH DR. KELLY MARICOPA CHILDREN'S HOSPITAL.

1. What are the potential benefits of the viewer?
I think the biggest that I've seen so far is the medications and being able to look at before the patients come, specially when they're not sure what they got and where. Also certain AHCCCS plans require that the patient fills some medications in order to get another med… so being able to see whether that has or hasn't happened is a help. That is the most useful for me so far… the medications.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
Yeah, I think it has, I did not have high expectations for how much information would be now right away.

3. What else – if anything - do you want from the viewer?
From the pediatric stand point ED visits other than just DC summaries. Pediatric patients get admitted a lot. Also adding the children's hospital in I guess would be very helpful.

4. What are the barriers to using the viewer?
Time, having one more computer program to log on I would say that's the biggest barrier.

Terri asks: How do you do it. Do you do it before of after seeing the patients?
It depends. .. I do it before or after.

5. When has the Viewer been most beneficial to you? Why?
Trying to sort out medications

6. What impact has the viewer had on your clinical decisions so far?
Not a lot yet I haven't found a lot of information on.

Terri asks: How many patients do you think you find?
I probably… I only do clinic 3 or 4 times per week with about 10 patients per sessions. Most of… I'd say 75% of them I find in the system… they are all AHCCCS patients.

7. How has the viewer impacted the quality of your work? Examples?
No

8. What impact has the viewer had on patient safety? Examples?
Nothing that I have in my mind right now but a think the medication history has potential

9. What about efficiency? Please provide examples.
I wouldn't say... No yet

10. Do you think the Viewer decreases or increases health care costs? How?
At this point, I don't know.

11. How have you integrated the Viewer into your workflow?
Already answered

12. Are you more likely to use the Viewer for a certain type of patient? What type?
I've bee trying to look at all of them at some point. More likely I would say if I have a medication issue and also if the patient has been in another institution.

13. Would you recommend the Viewer to other providers? Why/why not?
Yes, The data that is there is helpful.

14. What other types of health care practitioners need access to the Viewer?
I think in most places the physicians as well as the other office staff.

15. What other information is important to include in the Viewer?

I think the medication piece could be more timely, to look at medications that patient received in visits to ED occurred days ago. That would be really helpful.

16. What could AHCCCS do to increase the usability of the viewer?
I think being able to pull out multiple patients at the time instead of having to search each one. That would speed up the process. Being able to pull up several patients at the time. That should speed up the process.

17. What should AHCCCS's next steps be?
Getting as much information as possible available, a way to integrate the viewer with EMR to make it easy to get to it. To not have to log on in both separately

18. So far, what is the best thing about using the Viewer?
The medications list by far. And these patients don't have a lot of labs that's why I haven't run into the lab piece too much.0-18 year old, most of our patients get labs done internally and I don't see Maricopa labs a lot.

19. So far, what is the worst thing about using the Viewer?
Like I said before, it's one more thing to do… one more system and …

COMMENTS
Drug seeking behavior is not really a problem in this population, just knowing for example if the patient has or hasn't used the asthma meds. I would say that is one of our biggest issues is compliance. You can get a better sense with the viewer about that. I was able to pull out the med list with one of my resident for a very complicated patient. It was a huge help in the medication reconciliation to sort of figure out what meds the child was already on and helps us to do a better work in the medication reconciliation with the family.

Date: Interim measurement 2, 2008
What: PHONE INTERVIEW WITH DR. CHRSTOPHER AND DR. MANKIN

A. Dr. CHRISTOPHER
B. Dr. MANKIN

1. What are the potential benefits of the viewer?

A. You have mentioned the reduction of medication errors, I agree with you on that but the biggest benefit I find is that there is a huge problem in the emergency department with narcotic medications seeking and diversion and we can suspect things but do not have real data can back it up when you encounter a patient. We have had other ways to try to get the information such as calling a large pharmacy chain and query their data base to see if this person has gone to other facilities. But that is time consuming. So I have found the Viewer quite helpful. When I called up the patient on there and can get some useful information that I can … I can make a note in my EMR so in future encounters it would signal any future providers. So it's a way of reducing the abuse of opiod medications and some others that are abused as well.

A. The other thing is getting information about recent admissions. A lot of people are not great historians about what was done. So getting a DC summary of some sort of information from the Viewer can be very helpful there.

2. So far, has the Viewer fulfilled your expectations? Why/why not?

A. The pharmacy data has been reliably present on every patient that I query, however it lags about two months behind on average. I would like it to be more timely and I understand it's probably technical issues. But at least no more than 30 days out. Real time would be awesome or close to it. The other thing is a lot of the other information outside of the pharmacy data is fine. It's about 30% likelihood of finding DC or additional info. The pharmacy step is there but could be a little fresher and I'd like to see more of the other stuff.

3. What else – if anything - do you want from the viewer?

A. That's a great question, besides those two things I just mentioned, what is most useful for me is discharge stuff. You want something concise… I don't need like the entire...A… and all the other stuff. Lab info… I haven't really run into that at all. Just more info on there. So, I see the potential. And I haven't able to print.
I'm definitely a fan, I think it's useful. I mean my colleagues when they see me using it they are salivating ….

4. What are the barriers to using the viewer?

A. You know it is easy to get on to. That's not a problem that is not a barrier, my practice… we have EMR, it is natural for us to be sitting in the computer I can just save the sign on age. That is actually part of my practice know. So, I can get on it easily. The barriers are jus waiting for additional information to show up on it. I just want to see more.

5. When has the Viewer been most beneficial to you? Why?

A. Well clearly it's been with the drug diversion and thee narcotic seeking that I had. One occasion when I was able to confirm a patient had had a cardiac [… work?] within a manner of 90 days and I avoided an admission on that basis and there was another time where … a medication they were unclear about for seizure disorder and the thought they had been taken off of it but it turned out they were still prescribed on that. So that helped to clarify their treatment plan. And it was at night and I wasn't able to reach the primary physician… so that was helpful too.

6. What impact has the viewer had on your clinical decisions so far?

Basically those

A. More information, the better decisions I can make. As emergency physician, we are in a unique position having to make decisions quickly often with limited information. So more information a can get the better decision I can make, certainly more comfortable and more safely for the patient and medical legally as well. So, that's the impact that I have. I wish it was available for non AHCCCS patients too.

7. How has the viewer impacted the quality of your work? Examples?

A. I think you know the same way the more information a can get the better decision I can make that improves quality. Quality is improved also in my opinion by not over utilizing resources. So if can avoid an admission and not get a cardiac evaluation in the case of that patient I just described… that's several thousands dollars…that is not spent and that is quality. That admission would have cost probably $10,000 maybe $8,000. Certainly several thousands

8. What impact has the viewer had on patient safety? Examples?

A. Getting clarification on antiepileptic drugs… by getting that regime clarified. Again I keep going back to the drug diversion thing, you know is your keeping narcotics out of the hands of somebody that does not need them, or using them for […] purposes or possibly diverting them or selling them. That is community safety as well. Those are the two areas that come into my mind.

Dr. MANKIN ARRIVES

9. What about efficiency? Please provide examples.

A. I keep the icon on my computer to log on, I can very efficiently get on and query on a patient I wish to , and I don't have to spend a lot of time messing around, it saves me time. I haven't' had many hits on DC summaries, so it hasn't impacted me as much.

B. I think is better when it comes complete.

10. Do you think the Viewer decreases or increases health care costs? How?

A. It saved that admission that is a great example. I think that… great potential for that. I have one example. So imagine if it's widely available for all clinicians across the state. It could account for significant savings for the AHCCCs program. I see potential in the future, more than I am getting right now. I think it is going to be even more powerful. The POC for me is like a clinical trial on a drug, where you stop and say hey it's successful let's go to the FDA …

11. How have you integrated the Viewer into your workflow?

A. It's part of my natural workflow now. I have three programs that I load up in my shift. On average I see 25 patients or 30 patients per shift; I'm using the viewer… probably three times in that shift… I plan on using it more now that I know that there are these other patients that apply too. It's another tool that I have just right at my finger tips so that is part of my work flow.

B. I haven't incorporated it. But it's certainly helpful.

12. Are you more likely to use the Viewer for a certain type of patient? What

A. For me my drugs seekers

B. Agrees

A. And those that have a difficult history.

13. Would you recommend the Viewer to other providers? Why/why not?

A. Without a doubt, I recommend it without reservations.

14. What other types of health care practitioners need access to the Viewer?

A. Primary care would find this beneficial. There are some that are going to find it less useful. For sure some for some physicians will have more application. High volume primary care type physicians no questions.

B. I recommend it; I hope you keep doing what you're doing.

15. What other information is important to include in the Viewer?

B. Radiology reports, CAT scans results.

A. Something that occurs to me for lab data is that you don't need to have that exhaustive. In other words going back in time, it's just the most recent laboratory data on a patient would be great.

16. What could AHCCCS do to increase the usability of the viewer?

A. Getting more info on there, I think it's easy to get on to. It's not a barrier technically. It's just what is there. I'd like to see more current pharmacy data and more of the thing we just mentioned.

17. What should AHCCCS's next steps be?

A. To booster the content…provide more availability for providers. I got 24 docs that would be happily using it.

18. So far, what is the best thing about using the Viewer?

A. It is comprehensive data …state-wide… That is helpful, it prevents lost data and duplication that happens for people.

B. I agree, try to get as much data as you can and try to rank what the doctors want to see. In terms of desirability, to make a survey across the board. For me the most important document probably would be meds, second radiology reports, and third DC summaries. Everyone is going to be different. You can survey that and put those accordingly.

19. So far, what is the worst thing about using the Viewer?

A. For me the time… and I want more.

B. For me, not being able to have everything in one spreadsheet. If you could unify things in one format, so we don't have to sort. Like Wikipedia organizes things.

COMMENTS

B. This is a great thing, this is a good idea you need this thing keep rolling.

Date: Interim measurement 2, 2008
What: PHONE INTERVIEW WITH DR McCOLLUM BARBARA

1. What are the potential benefits of the viewer?
Mostly, It would decrease duplication of medical services. If some somebody has test a done I don't have to repeat it.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
Yeah, I have been able to find something specially labs.

3. What else – if anything - do you want from the viewer?
To have more information, more hospitals, more facilities
Scottsdale hospitals

4. What are the barriers to using the viewer?
It's just the fact that I can't find info most of the time when a patient comes in. My match rate is around 5%.

5. When has the Viewer been most beneficial to you? Why?
Usually some of the patients use Emergency room, so…having that information.

6. What impact has the viewer had on your clinical decisions so far?
I think it's maybe not to get test if they are already done.
Basically I have avoided a couple of CT scans.

7. How has the viewer impacted the quality of your work? Examples?
Definitely improved

8. What impact has the viewer had on patient safety? Examples?
I haven't had any. I think it would if it had like allergies that the patient had forgotten to tell you about, but haven't had any of those. Maybe less radiation with less cat scans can increase patient safety.

9. What about efficiency? Please provide examples.
Because it's easier to go in here and get the information instead of having the patient requested it. It can take a week or 10 days before we get information from the hospital. So… that definitely improves efficiency and patient care.

10. Do you think the Viewer decreases or increases health care costs? How?
Oh definitely decreases health care costs, because of decrease in duplication.

11. How have you integrated the Viewer into your work flow?
We have EMR here, so basically I … look up the information when the patient is still here.

12. Are you more likely to use the Viewer for a certain type of patient? What
If they told me they've been in others facilities or if is someone who has a very complicated past medical history.

13. Would you recommend the Viewer to other providers? Why/why not?
Oh Yes, I definitely I would to try to get enough information about a patient.

14. What other types of health care practitioners need access to the Viewer?
I would just say MD's.

15. What other information is important to include in the Viewer?
More pharmacy information.

16. What could AHCCCS do to increase the usability of the viewer?
More facilities on it. It is very easy to use.

17. What should AHCCCS's next steps be?
More partners…

18. So far, what is the best thing about using the Viewer?

When I do find someone… the info that is there is great.
Pretty easy to find people

19. So far, what is the worst thing about using the Viewer?
Not enough of my patients in there…

Date: Interim measurement 2, 2008
What: PHONE INTERVIEW WITH DR. PARISI

1. What are the potential benefits of the viewer?
More efficient doctor-patient interaction. If I just have more information I can make better decisions and a lot quickly so, I think that one difficulty is that I have so many applications opened in my computer that I use , it's overwhelming. So it's hard for me to even work. I think that eventually I will be able to integrate all this data.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
I would say functionally it has but it needs more data.

3. What else – if anything - do you want from the viewer?
I'd like a picture of the patient, because there is a huge amount of medical fraud, so eventually I would know t who the person is and it's not using for example a cousin name for Dr shopping.
I'd like to have the entire record not just whatever you pick. I think you should be able to see everything. And I jus want to see more of the patient's records.

4. What are the barriers to using the viewer?
No additional barriers.

5. When has the Viewer been most beneficial to you? Why?
It's been most beneficial to verify what patients have told me and has happened over another hospital, because, a lot of people don't tell me the true.

6. What about efficiency? Please provide examples.
I'd say currently it's about the same, but it could improve with more patients into the system.

7. Do you think the Viewer decreases or increases health care costs? How?
I would say credibly it decreases health care costs, the concept … conceptually I think it will decrease health care costs.

8. How have you integrated the Viewer into your workflow?
Like I said I have a view open periodically, which's interesting in my hospital that's all I do, is the computer we don't have paper charts. It's just one more computer application opened.

9. Are you more likely to use the Viewer for a certain type of patient? What
No, any type

10. Would you recommend the Viewer to other providers? Why/why not?
Yeah, I would recommend it for obvious reasons, just for access to a greater amount of patient information.

11. What other types of health care practitioners need access to the Viewer?
I can't think in any in particular. I would say everybody could benefit from it.

12. What other information is important to include in the Viewer?
I want it all. I want everything that somebody has. In my hospital I click on a patient chart and I can see everything from a CAT report they had a month ago to surgery they had four years ago. I can read the surgical report. If you can view the entire medical record, that would be ideal.

13. What could AHCCCS do to increase the usability of the viewer?
I think many talks, so if you start driving people to use it I think that's the easiest way to get people to use something.

14. What should AHCCCS's next steps be?
I don't know, I guess to expand the use of the viewer to more practitioners.

15. So far, what is the best thing about using the Viewer?
I would say it's fast.

16. So far, what is the worst thing about using the Viewer?
I wouldn't say there is a worst thing. I don't have a hate for anything about the viewer yet.

Date: Interim measurement 2, 2008
What: FOCUS GROUP WITH MEMBERS OF MARICOPA HEALTHCARE FOR HOMELESS

A Dr. McKinley
B Dr. Warholak
C Dr. Williamson
D Dr. Eller
E Ana Hincapie
F Dr. Croll
G Lindsey Kroll
H Dr O'Sullivan

1. What are the potential benefits of the viewer?

D. We see a lot of patients that are discharged from hospitals, emergency room that are homeless…so any data that we can get as soon as possible…because frequently we don't get automatic discharge summary from the hospitals because they don't know how to identify its location. More information we can get and as soon as possible.

H. I think our patients are not good historians so if they can tell us what hospitals they were they may not be able to tell us what the diagnosis was on discharge…so it will be very helpful for us because of the discharge summaries.

C. I think med history is very useful.

F. It supports continuity of care because patients some time are suppose to go to the GI in two weeks and then the cardiologist and they don't remember that. It connects us to other specialists.

D. If we can get emergency room data the potential benefits would be double or triple fold.

2. So far, has the Viewer fulfilled your expectations? Why/why not?

C. No and I think the biggest reason is the lack of information…the potential is there but…

H. I think I already mention I got one med list. That's all.

A. No and also the time lag…We had a guy that went from hospital to hospital and the only discharge that I could pull up was from three months ago. It was not timely data. And it is the only success that I got with discharge summaries.

3. What else – if anything - do you want from the viewer?

D. Emergency room discharge summaries…

C. I think it would be helpful if ultimately this became statewide and everything to include the primary care providers data on the list. Because our patients sometimes come to see us in addition to see doctors in other centers …and they don't necessarily tell us nor do they tell that the medications were changed there. And we don't have data.

H. What I think it would be great on there…if you could ever get X-rays.

4. What are the barriers to using the viewer?

H. Finding a patient

F. It is definitely user friendly. It's just the information is not there.

5. When has the Viewer been most beneficial to you? Why?

NO

6. What impact has the viewer had on your clinical decisions so far? Examples?

NO

7. How has the viewer impacted the quality of your work? Examples?

NO

8. What impact has the viewer had on patient safety? Examples?

NO

9. What about efficiency? Please provide examples.

D. Decreased it

10. Do you think the Viewer decreases or increases health care costs? How?

D. I think it could decrease health care costs, if we can get it up and running timely. Because it would avoid duplication, laboratory studies, imaging studies and also it would allow us to make clinical decisions in a more timely manner. But it's upon the time data get on there.

11. How have you integrated the Viewer into your workflow?
F. I still try AHCCCS patients information. When someone has been discharged from a hospital…we still try. I look for the information before I go to see the patient in the room.

12. Are you more likely to use the Viewer for a certain type of patient? What type?
D. Any of them… med is some body that's new…anybody.
H. Somebody that has track record on the area.
H. The ones that would be delightful are the people that use the ER for primary care.

13. Would you recommend the Viewer to other providers? Why/why not?
H. Today?? …not today
F. Theoretically yes, it could be wonderful…My previous history was on the reservation you know…people go to ER and then you have no information there. I think there are lots of places that could benefit once…when it' is up and running.
C. I'm still exciting about it's just…I think the timeline has to be work out.

14. What other types of health care practitioners need access to the Viewer?
Podiatrists
Physiotherapists
Dental Practitioners

15. What other information is important to include in the Viewer?
H. ER...ER
F. Primary care
D. Something that I would encourage is to limit the amount of information that's…I would hate to be overwhelmed with a ton of information that I couldn't find want I wanted…So what I would want from another primary care provider are… to see the diagnosis, what the problem was, their allergies and what medications the patients had.

16. What could AHCCCS do to increase the usability of the viewer?
F. Add more information
H. I think it's good, pretty slick.

17. What should AHCCCS's next steps be?
H. More data, more patients, faster

18. So far, what is the best thing about using the Viewer?
F. Easy

19. So far, what is the worst thing about using the Viewer?
D. Data are not on.

COMMENTS
H. When I try to pull a patient…and it tells me the patient is not on there…I have the question about hyphenated hispanic names. Our patients sometimes use a different name every place they go, especially if they have a warrant or something like that. So it could be that the name and birthday they use in the front desk are not the same they used in the ER…So it's not your fault we can't pull up. That is something to be aware of.

Date: Interim measurement 2, 2008
What: INTERVIEW WITH DR. RAGLOW AND DR. BROWN

A. Dr Raglow
B. Dr Brown

1. What are the potential benefits of the viewer?
A. [..] want me to repeat things that I said last time.
B. I'll say, I wasn't there I think so […] the potential benefits are you get up to date and accurate information from other facilities that are not available to us now […] but if people go to the other facility then we can't get that right now.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
A. It has, uh, the viewer itself is very easy to use and has exceeded my expectations; the amount of information has been less than my expectations.
B. Agreed.

3. What else – if anything - do you want from the viewer?
A. I want more discharge summaries.
B. I would like discharge summaries and more, I would like to see images and it would be great to have consult.

4. What are the barriers to using the viewer?
A. I think the major barrier is that probably 90% of the time we don't find any useful information on a given patient so there's less of an incentive to go looking.
B. Like I said last time, you have to really get an answer if you're going to encourage physicians to change their workflow to use something like this.
B. That was Greg that said that but I don't think the hit rate has changed for me in the last month.
A. What I meant by 90% is 90% do not have information, 10% do. I didn't use it enough to know if there is an increase. I have not had an increase in the information that I've…I've looked at about 10 patients in the last month, and business is about the same yield.

5. When has the Viewer been most beneficial to you? Why?
A. For me, I found the only thing that I've found has been medication history. The way it was helpful was, I was concerned whether this patient was taking medication from other providers and it confirmed that they were not, so it helped me to trust the patient more.
B. No change for me.

6. What impact has the viewer had on your clinical decisions so far? Examples?
A. It hasn't had an effect on my…uh…just like last time, just like what Dr. […] said it very occasionally is able to confirm a medication used history for me.

7. How has the viewer impacted the quality of your work? Examples?
A. It has not.
B. the potential is there, it's just not there yet.

8. What impact has the viewer had on patient safety? Examples?
A. Right now, I don't see a great impact, but again, the potential is there.

9. What about efficiency? Please provide examples.
A. I guess one thing is we can get the information without a phone call so even if there's nothing there, at least we find out that there's nothing there. For example, we had a patient with discharge from county hospital and we looked on the viewer and it wasn't there but it was already 4 days later and we didn't bother calling the county hospital.

10. Do you think the Viewer decreases or increases health care costs? How?
A. not yet
B. no impact right yet

11. How have you integrated the Viewer into your work flow?
A. Me, I've uh, given our MA's the…they have their own account and we just ask them to see if there's anything on there. So it doesn't impact my work flow so much as it impacts my MA's work flow.
B. I do it myself, I never have asked my MA to do it so I just do it myself and it doesn't, I haven't really incorporated it into my work flow, I just check it when I think of it, sort of on the side.

12. Are you more likely to use the Viewer for a certain type of patient? What type?
A. Yes, I'm more likely to use it on AHCCCS patients that are on narcotics.
B. Sorry, also patients that have been discharged from the hospital, that I don't have records on, although that has not proved fruitful yet.

13. Would you recommend the Viewer to other providers? Why/why not?
A. I would, although I probably would wait until there was more data because again, as Dr. Brown mentioned, if there is no information there, then it will only frustrate the physician. I would do it but let's build up the database.

14. What other types of health care practitioners need access to the Viewer?
A. Primary care physicians, emergency physicians, […] specialists.
B. Your idea of pharmacists in the […] too. Well you did it. That was a good idea.

15. What other information is important to include in the Viewer?
A. I mentioned to Lindsey that because we get the immunization records from the state, I would incorporate that in this so that we are all using one channel […] to go out of several channels for the same information.
B. Another thing that I would love to see incorporated, which is sort of off topic, but would be but some other things that would be useful in general would be a list of which plans that various consultants have contacts with, so that when we refer out to cardiology, we know that Dr. […] is on […] or something like that.
A. The other thing that would be good would be formulary. The second one is actually going to be incorporated into our electronic medical records shortly.
B. All standard?
A. Yes, or all of the outpatient […]

16. What could AHCCCS do to increase the usability of the viewer?
A. I think the usability is excellent.

17. What should AHCCCS's next steps be?
A. I guess, I mean, continue getting discharge summaries and things that you're doing onto it, include other hospital systems for their data.
B. If I can get more data and get the doctors, just like your doing once the…mean, I think you're going to know its almost like the canary in the coalmine for the doctors, but all of a sudden you have doctors start going ahah! This is useful, then to me that means it's ready to start giving it to other doctors. I guess it's the opposite of canary in the coalmine. That's a bad analogy.

18. So far, what is the best thing about using the Viewer?
A. […] of the data that we found, so it's been medication […]
B. Yes, and then it's very easy to search and it's easy to use and it's fast.

19. So far, what is the worst thing about using the Viewer?
A. You know there's not enough data on a given patient.

COMMENTS
A. I just had a couple patients that I was a little skeptical about with their narcotic use and I know at least I haven't been charging their insurance for narcotics from other sources.
B. I still have yet to find a discharge summary on one of my patients, but in primary care we see, you know most of our patients haven't been.

Date: Interim measurement 2, 2008
What: FOCUS GROUP PHOENIX

A. Dr. Frechette
B. Dr. Kelly
C. Dr. Peterson
D. Dr. Christopher
E. Dr. Hsu
F. Dr. Sisley
G. Florence Roque, NP

1. What are the potential benefits of the viewer?

E. Logged into a Sonora lab from a nephrologists office. He was able to see what he had already ordered and did not have to order an additional test.

B. Medication Record is the best record type for me. I am able to find many patients with medication histories.

D. ED drug seeking and aversion behavior. He is seeing a two-month delay on medication history. He would like even closer if possible. Medication History gives you a great deal of historical information that doctors would not normally have.

2. Hit Rate

D. 80%

C. 80% doesn't look unless she has a reason to look from.

E. non AHCCCS .5% as for AHCCCS much higher

3. What would you like to see on the Viewer?

B. Very helpful with the med history but would like to have it reported sooner.

A. I would like to see the children's hospitals incorporated as well.

B. Arizona Immunizations and dictation notes.

F. Very spotty with medication history, sometimes the system can be very incomprehensive. I noticed that information is missing especially primary care physician based information. Is there anyway to tap into that information like the Walgreens etc facilities?

3. Information

D. The system is easy to use. It was easily adopted into the workflow for the emergency room department physicians. No login issues at all or time delays and is very user friendly.

4. When has the viewer been most beneficial and why?

D. Catching drug seekers. This tool has been instrumental. To have something that helps and prevents future drug use is amazing. The other utility is one patient came in with a cardiac history with stints, they had an evaluation done but could not remember. I went into the AMIE and found out that they had a work up 90 days ago. Because I was able to find that information, I was able to prevent an admission.
The other case was a lab that was helpful, prevented an admission.

A. The system is much more helpful with adult patients.

C. Had a suspicion of a patient. Found that through the AMIE it validated that the patient was telling the truth thus supported more trust with the patient.

5. What impact has the viewer had on patient safety? Examples?

D. AMIE assists in not sending them out with a prescription they don't need. Overall it will interweave quality and safety. The more information we can get the better in every category.

6. Do you think the Viewer decreases or increases health care costs? How?

D. Has and will decrease. Needs to be magnified and scaled up. You avoid a tremendous amount of duplication by having AMIE. Easy to see that 7 million spent on the project will be coming back quickly. We need more users; several members of the group have looked over the shoulder to obtain information.

C. Yes for the practice, for the project maybe not.

7. How have you integrated the Viewer into your workflow?

C. Surveyed her staff. Asks the patients if they had gotten labs anywhere else besides Banner and front desk is using it to prepare new patient charts.

8. Are you more likely to use the Viewer for a certain type of patient? What type?

F. AHCCCS Patients

D. Any patients that they may have suspicion.

9. What other types of health care practitioners need access to the Viewer?

D. ED Physicians, Hospitalist's

10. What could AHCCCS do to increase the usability of the viewer?

B. Give the ability to search in other ways. Today's criteria can be challenging would like to have a variation on names ….call Dr. Kelly for specifics.

11. What should AHCCCS next steps be?

B. Labcorp and other data partners

F. The notion that we can't have access to things like behavioral health and HIV is crucial to complete care. There is a huge void in denying a physician this access.

D. Advocacy work that is done through St. Josephs. We can gather together some interested parties that would be willing to assist in pushing things along. Certainly this is something that is worthy of that effort. Dr. Christopher has offered to go to them to solicit assistance.

12. What is the best thing about the VIEWER?

D. Information

B. The concept and the potential for more information.

G. Web based.

D. This is the first step for our evolution of complete healthcare. It could possibly lead to something that would more powerful and far reach.

F. Symbolically that AZ is taking the lead in creating and shine where HIT is a progressive state in tackling this tough issue.

13. What is the worst thing about the VIEWER?

E. Sometimes you can't find the patient.

D. Real time information

Date: Interim measurement 2, 2008
What: MARICOPA COUNTY HEALTHCARE FOR HOMELESS

1. What are the potential benefits of the viewer? Any success stories?
No

2. So far, has the Viewer fulfilled your expectations? Why/why not?
No
No

3. What else – if anything - do you want from the viewer?
Timeliness of reports, particularly discharge summaries […].

New question: What is the rate of finding patients in the viewer?
Are you looking for a number? So basically, how many times you are actually finding a patient, what's your rate 5%, 10%, 15%?
It's like 1%, not much. It's basically the hit rate. So less than 1%

4. What are the barriers to using the viewer?
Timeliness of […] within 24 hours of the discharge from the hospital and that's too quick for the data to be available.
If you can find the patient at all. I rarely get past the search for the patient.

5. When has the Viewer been most beneficial to you? Why?
6. What impact has the viewer had on your clinical decisions so far? Examples?
Collective answer: none

7. How has the viewer improved the quality of your work? Examples?
Collective answer: No

8. What impact has the viewer had on patient safety? Examples?
No

9. What about efficiency? Please provide examples.
No

10. Do you think the Viewer decreases or increases health care costs? How?
It makes a difference right now. […] one way or the other

11. How have you integrated the Viewer into your workflow?
No change

12. Are you more likely to use the Viewer for a certain type of patient? What type?
No response

13. Would you recommend the Viewer to other providers? Why/why not?
It has potential when it gets up and running.
Dr O'Sullivan: I still believe that it's a good idea, and I still believe that the concept is excellent and I think that, there's a lot of bugs that need to be worked out […], but some of the bugs that have to be worked out have to do with how the physician in the hospital operates. I mean basically, they need to do their dictations immediately and they need to be in the system after you dictate within 24 hours, and then if some of those human factors can take place I think the system itself is a very good concept.

15. What other information is important to include in the Viewer?
Images
Yeah, imaging would be good, but I think it's really discharge summaries, we're just looking for ER records and discharge summaries would be very helpful.
Medication lists are very nice.
That's startling me that you are not finding a lot of that […] the discharge summaries I would be curious to go back to […] a few weeks ago you could probably see that they're there but like you said its so quick […] that that's why your not seeing anything so unless we get the system faster it's not a benefit. The […] summaries would be great though.
Does that look just like a discharge summary? no

Maricopa's and St. Joe's have electronic […] and they are very difficult to follow. Once you get used to it, they are helpful. But you have to really get used to it.

Added question: Have you had a situation where you didn't have to order another test or you averted an admission or something like that?
Not yet.

16. What could AHCCCS do to increase the usability of the viewer?
You are going to have no issues with that.
There is none at this time

18. So far, what is the best thing about using the Viewer?
The concept
The potential

19. So far, what is the worst thing about using the Viewer?
I think […] there's just not enough information applicable to them at this time.

COMMENTS
It really works nicely it's just the lack of data.

And I think that we really figured out, I mean I branched out to 3 different practice settings or clinical settings. We went to an […], we went to private practice, we went to affiliated practices and clinics and so forth, and you know, our private practices are getting hits left and right but again these are small practices where their patient population comes in maybe once a month or they come in once every two weeks, depending on what they have going on, they all have insurance, and it's a little bit different. You hit the nail on the head today that they just come the very next day, I don't think there is a system out there that's going to produce that bit of information immediately, and if there is, this is good information for us to understand though that reaching out to […] may or may not be a really good thing, or if it is, than we just need to increase usability and obviously the efficiency of the viewer. But this is all great information, it sounds like your just telling us the same thing back, and your being consistent so that's good one.

Actually, one of the things that Dr. O'Sullivan brought up that I think could be done is that we don't necessarily need to know what the doctor's emergency room or even the hospital ended up treating them for. If we could get immediately a med list, the lab data that was done, and the x-ray report we can form our own conclusions. We don't necessarily need to know the conclusions that they came to, but if we have the data, that would help. And that information actually should be able to be put in a rapid time period.

Discharge summary, now, here's how it is with discharge summary […] After discharge, about 24 to 48 hours we'll see the preliminary discharge summary come through and get that […], um labs as soon as we get caught up we are actually like 3 days away from being completely caught up, those will populate every 24 hours so every day at noon, it will actually batch and it will just re-populate. Everything that comes through the door will then be available on the […].
We don't have […] at this time
How bout the hospital lab?
see if we could get the hospital lab, because those labs pop up into the hospital lab immediately […] so if somehow those could be inputted immediately at the same time, you know, if there was a direct feed, and also if the x-ray results and things like that could be a direct feed.
[…] No that's really good information and we have a lot of other people that are saying what do we need from labs from all various places. Sonora is great, but Sonora […]. I don't understand why we can't do that just yet because I know […] in and out within two hours, so that's helpful. Now, where we ran into a little bit if an issue is with the medication entry, and the reason for that is because it goes into a medication aggregated company out of Tucson […] takes them two weeks till they punch it out. We're actually seeing a little bit more of a delay, we're seeing about […] but I'd like it to be just a little bit faster […]. So that's a biggie, so that's good information, we'll get it out there. I'm hoping within the next two weeks, and as you progress through January, you're going to see labs a little bit more timely […]. Discharge summaries […] that's the most real private information we have that's useful so,
[…] radiology would be wonderful, but we have a hard enough time when we […] we got something getting it back in a timely manner. Its getting in front of a radiologist there's a time gap. No matter how that information was to get transferred so that […].
[…] so there's actually, the emergency room […] and most patients aren't discharged from the hospital until they have printed radiology […]
But if we were to fax a record request for that hospital record, there would be a time lag between […].

Date: Interim measurement 2, 2008
What: INTERVIEW WITH DR. LEWIS

1. What are the potential benefits of the viewer?
The benefits, I believe, would be getting information quickly that could help you take care of the patient.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
Unfortunately, I haven't been able to incorporate the viewer in a manner that would be able to meet my goals with the viewer because of problems inherent in the flow of patients in the clinic. There's a lot of information that I would find a little bit more valuable which would include X-ray results because those cost more when you are duplicating those tests and since probably at least half of the patients I see are obstetrical and newborn patients, they don't have dictated discharge summaries and therefore I can't give information because there is no dictation.

3. What else – if anything - do you want from the viewer?
Yes, X-ray results and […] test results and non-dictated discharge summaries.

4. What are the barriers to using the viewer?
My barriers are having time to be able to access the viewer.

5. When has the Viewer been most beneficial to you? Why?
The viewer has not helped me provide patient care. I found records but the viewer hasn't helped me do anything differently, overall.

6. What impact has the viewer had on your clinical decisions so far? Examples?
No

7. How has the viewer impacted the quality of your work? Examples?
No

8. What impact has the viewer had on patient safety? Examples?
No

9. What about efficiency? Please provide examples.
No

10. Do you think the Viewer decreases or increases health care costs? How?
Potentially…

11. How have you integrated the Viewer into your work flow?
What I do, because I am buried with time is I basically budget 15-30 minutes once a week so that at the beginning or at the end of the session, I can look up some patient charts. I think it has the potential to decrease health care costs by decreasing the duplication of studies.

12. Are you more likely to use the Viewer for a certain type of patient? What type?
Most likely it would people that have been seen at other health care facilities recently.

13. Would you recommend the Viewer to other providers? Why/why not?
Yes, because I believe in different type of workflow environments the viewer can be much more easily incorporated and help save time and resources.

14. What other types of health care practitioners need access to the Viewer?
Physicians. All health care providers, nursing staff, medical records and other support staff such as medical assistants

15. What other information is important to include in the Viewer?

16. What could AHCCCS do to increase the usability of the viewer?
Sometimes I'm having a difficult time trying to figure out how to close out one particular patient while I go search for another patient.

17. What should AHCCCS's next steps be?
Getting more information into the viewer

18. So far, what is the best thing about using the Viewer?
It's easy to search for patient names.

19. So far, what is the worst thing about using the Viewer?
The fact that it just takes me time to be able to log on and search for the information and it takes me probably a good three minutes from the time I sit down at my desk to log into the system, to type in the patients name, to drop the information that I want and I don't have three minutes in the middle of an 8 minute appointment.

COMMENTS
You know I think the viewer has a fantastic place if we can get […] staff to be using it so they can draw up information so that it's sitting in front of the doctor at the time of the point of care. It is not going to fit into a work flow very easily in a fast paced clinic that doesn't have a lot of support staff to do that. It also can have a lot of benefits for people who might be involved in residency programs, or emergency rooms or people that are doing hospital rooms because they are not adhering to a schedule as nearly as tightly as people who don't have some of that extra support. It's going to be, I think, really difficult to incorporate into a group practice or a solo practice just because of the time restraints involved.

Date: Final measurement , 2008
What: INTERVIEW WITH DR. DIRLAM

What are the potential benefits of the viewer?
I actually looked at a discharge summary, I believe, on one of my patients from another hospital which helped me understand what happened to her during hospitalization which was very helpful because she was confused as to her medication.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
Yes. I think it's getting better. My expectation initially is that the information would be spotty because there are always implementation issues and now that we're getting labs and discharge […] it's coming along. I feel like a little more real time on labs but I haven't checked it in the last week so I don't know if that's come along or not. But overall, I think it's doing great.

3. What else – if anything - do you want from the viewer?
Well, again, my whole thing, and I'm sure you're working on it, let me say it that way; I would like more medication records from other healthcare plans because we have a limited access population. We do have one, but it's probably less than 5% of our population so it would be very helpful to have the bigger players like United, Aetna, […], Blue Cross Blue Shield, being able to get that information for medication lists. And then I would really be able to say it did help me with medication list reconciliation.

4. What are the barriers to using the viewer?

5. When has the Viewer been most beneficial to you? Why?
I think it's been beneficial when I have had an AHCCCS patient and been able to look at the medication list, that's been extremely helpful. It's also been helpful with discharge summaries and certain labs, if I've had to go back not within the week, but if I had to go back several weeks or a month to look at labs ordered by other physicians.

6. What impact has the viewer had on your clinical decisions so far? Examples?
That's hard to quantify because there's so many pieces to clinical decision-making. I can say that it had added to the fund of knowledge which definitely impacts the decisions you make, but to say more than that, I really can't say what I did last time that it distinctly did ok, that this was a turning point in my decision because I had that information. But I think it does add to the fund of knowledge and enables me to make better decisions.

7. How has the viewer impacted the quality of your work? Examples?
8. What impact has the viewer had on patient safety? Examples?
9. What about efficiency? Please provide examples.

10. Do you think the Viewer decreases or increases health care costs? How?
I would have to say probably hasn't had that great of an effect on cost at this time just because of the functionality with being able to get into the banner system for a lot of things that we need. I think that it probably really hasn't had a great impact, right? I think we are talking cents, not dollars at this point.

11. How have you integrated the Viewer into your workflow?
Not well. If you are uncertain if the information is going to be there. If the time element when you are seeing patients that if you write oh yeah I know it's going to be there then you are going to take the time to do it. But if you are uncertain then I don't use it until after, either right before I see the patient if I know I'm going to need information or after the day is done. So it's really not been integrated into the work flow just because of the uncertainty about whether or not it would be successful in getting me the information.

12. Are you more likely to use the Viewer for a certain type of patient? What type?
Pretty much AHCCCS patients. I did say that I'm starting to ask for the discharge summaries maybe a little more to see if they can find those because those are difficult and we do have patients that go to other hospitals outside of Banner. But typically it's going to be the AHCCCS patient just because medications are so key.

13. Would you recommend the Viewer to other providers? Why/why not?Oh yeah! Even though I think my use right now is limited I think you feel like you are watching a trial grow do I think that the capability of everything is phenomenal and it's easier to learn something if you get on the ground floor, so I would definitely recommend people to start trying to use it.

14. What other types of health care practitioners need access to the Viewer?
15. What other information is important to include in the Viewer?

16. What could AHCCCS do to increase the usability of the viewer?
I think that it's easy to use. I don't see any issues; it's easy to log on, it's easy to get to navigate through, I don't see there needs to be any changes in that matter.

17. What should AHCCCS's next steps be?
Other than getting the other plans to release the medication lists I would, again, state the other areas that we would definitely see a need for would be in radiology arena. It would be very helpful to have some of the larger players of that, I mean we obviously can get Banner, but inside Sonora, Scottsdale medical imaging. Those are some of the big facilities that we use and it would be great to get them on.

18. So far, what is the best thing about using the Viewer?
I think the best thing is having it. If I need to look it up, there is a possibility I can find it in there. If you wanted to go down a little more, I would say the most useful piece of it right now for me is medication lists on the AHCCCS patients. Medication lists I think I said the last time are really an arena where we feel blind not having the information. Whether it's because the patient forgets what other physicians have put them on because as an internist your […] the "Captain of the Ship" and there are so many ports that that ship docks in and without knowing what the other people have given the patient and them not remembering it, it really does make it difficult. The other thing is it does help with those patients who are trying to game the system for pain medications, sedatives, things of that nature. So for me, medication lists are most helpful.

19. So far, what is the worst thing about using the Viewer?
Well, the viewer itself is easy to use. I think the worst thing is having the expectation that the information is going to be there and it's not.

COMMENTS
I think, yeah know, it's coming along very well. I think that you guys are doing a great job, that you are very supportive and very responsive to inquiries and issues and again, I think you are going through that initiation stage where which there's going to be […] here and there. But I think you guys are doing a great job.

Date: January, 2009
What: INTERVIEW WITH DR. FRECHETTE

1. What are the potential benefits of the viewer?

2. So far, has the Viewer fulfilled your expectations? Why/why not?
Yes

3. What else – if anything - do you want from the viewer?
We'd like the lab results. It's absolutely fantastic when its working, […] we have very huge problems trying to communicate with primary care offices and getting faxes on patients that have had recent lab work and obviously we don't want to order the same testing again and increase the cost to obviously the patient and the in insurance company. If we can access that lab report, that is absolutely the best.
Hit Rate: probably 95%

4. What are the barriers to using the viewer?
Just the fact that maybe the laboratory testing wasn't available in the time frame that we received the lab through you guys. I mean, obviously it's a new program. […] history for everyone would be great.

5. When has the Viewer been most beneficial to you? Why?
Pretty much what we said before. Making sure you're not overly […]. I think duplication of services is the #1. One of the most cost effective things I think is being able to look and see "oh they've already had a thyroid […] I'm not going to reorder that.

6. What impact has the viewer had on your clinical decisions so far? Examples?
It's great. If we don't have to call a primary care office for anything, we become highly efficient. I mean I don't mean to slam primary care, its just they are really busy and it's impossible to get a hold of them.
We are waiting on the queue; push 4 push 3, push 2 whatever.
I mean they are really busy and they are usually working with a lot less steps than we have.

7. How has the viewer impacted the quality of your work? Examples?
8. What impact has the viewer had on patient safety? Examples?
9. What about efficiency? Please provide examples.

10. Do you think the Viewer decreases or increases health care costs? How?
I think decreases health care costs.

11. How have you integrated the Viewer into your workflow?
Actually our document management department is primarily our workflow. Sometimes the doctors go because they all of a sudden realize while they are seeing the patient that they need more information and they might ask document management to obtain labs or medication histories or whatever.

12. Are you more likely to use the Viewer for a certain type of patient? What type?
If the viewer had information on every single patient we'd use it for everybody but I think in the early days it was limited but now its not.
Not for everybody it's just that the […] that cans kind off put a damper on looking at everybody.

13. Would you recommend the Viewer to other providers? Why/why not?
We would. I mean it's going to shortcut the same problems we had in the past.

14. What other types of health care practitioners need access to the Viewer?
Anybody: primary care, specialty care, I can't imagine anybody would not benefit in some way.

15. What other information is important to include in the Viewer?
Imaging reports. We are working on an operative approach right now […]. Yes, imaging would be good.

16. What could AHCCCS do to increase the usability of the viewer?
It’s pretty easy. If I can do it, anybody can do it. It’s really self-explanatory, it’s not hard at all. I mean, because every doctor would know […]. If you’ve never seen a computer before, then ok it might be an issue, but if you’ve seen a computer before you should be able to do it.

17. What should AHCCCS’s next steps be?
To get it going throughout the entire medical community. I don’t know if that is an attainable goal, but there’s a big population here anyway just within AHCCCS, there are lots of Medicare advantage plans. I mean the population is growing.

18. So far, what is the best thing about using the Viewer?
User-friendly, instant gratification

19. So far, what is the worst thing about using the Viewer?
Need more people submitting information

Date: January, 2009
What: INTERVIEW WITH MEMBERS OF MARICOPA HEALTH CARE FOR HOMELESS

1. What are the potential benefits of the viewer?
I have to be honest, not much. It has not impacted my practice.
I think that's the biggest thing is we just haven't had much luck finding the folk.

2. So far, has the Viewer fulfilled your expectations? Why/why not?
No, because again we just aren't; able to gather any data from it for the most part.

3. What else – if anything - do you want from the viewer?
We would hope that things would pop up. I don't even know what to say because I don't; know if they're not popping up because of the time gap or because they used a different name at the hospital; we don't know why it's not popping up.

4. What are the barriers to using the viewer?
You can't find the patient.

5. When has the Viewer been most beneficial to you? Why?
On the rare occasion that we did find the patient

6. What impact has the viewer had on your clinical decisions so far? Examples?
I have to say that unfortunately it happened so rarely that I don't remember.
I'd say once. One time a med list popped up that was helpful to me. Otherwise I would have to say no. Particularly the things I was looking for; I can remember one gentlemen in particular that had a chronic problem that he was in and out of multiple emergency rooms and I knew that, and when he did come up it was an ER visit several times ago, so it was like reading last night newspapers. So much has happened in between that it doesn't happen what you do today.

7. How has the viewer impacted the quality of your work? Examples?
I don't think so, no.

8. What impact has the viewer had on patient safety? Examples?
9. What about efficiency? Please provide examples.

10. Do you think the Viewer decreases or increases health care costs? How?
No impact

11. How have you integrated the Viewer into your workflow?
After I saw the patient, if I realized that there was data out there that I was trying to access. So I would have to say it would be after an encounter with the patient.

12. Are you more likely to use the Viewer for a certain type of patient? What type?
The ones that were at local facilities recently, that's it.

13. Would you recommend the Viewer to other providers? Why/why not?
I think it's hard to say. Like Lindsey said, we're so unique here. If there is somebody in a private practice or in an emergency room someplace I don't know that's a different world. I can't say that I would recommend it to another health care for the homeless provider. […] It didn't hit me until a couple weeks ago looking at […] how often you guys were going in there that we usually […] It's very difficult to give you anything that's going to help you […]

14. What other types of health care practitioners need access to the Viewer?
15. What other information is important to include in the Viewer?
16. What could AHCCCS do to increase the usability of the viewer?
17. What should AHCCCS's next steps be?

18. So far, what is the best thing about using the Viewer?
I would say, on the few occasions that we did have hits, it was nice to have the current med lists and the pharmacy records. I think that was very beneficial on a couple of occasions. Any discharge records that we were able to get were beneficial as well. Very few and far between though

19. So far, what is the worst thing about using the Viewer?
You know the answer

APPENDIX G: WEB-DELIVERED QUESTIONNAIRE FOR ECONOMIC OUTCOMES MEASUREMENT

1. Based on information you were able to find in the viewer…
2. How many fewer lab tests did you order this week?
3. What types of lab tests did you not order this week?
4. How many fewer imaging studies did you order this week?
5. What types of imaging studies did you not order this week?
6. How many fewer prescriptions did you order this week?
7. What types of prescriptions did you not order this week?
8. How many fewer patients did you admit to the hospital this week?
9. On average, because you used the viewer …
10. How many times in this week did you not order medical records by courier?
11. How many minutes less did you spend evaluating each patient this week?
12. How many minutes more did you spend evaluating each patient this week?
13. If you use the Viewer in the emergency department (ED)...

    How many minutes per patient were saved in the ED because of using the viewer?

APPENDIX H: COMPLETE RESULTS BY QUESTIONNAIRE

BASELINE No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
1. I expect the data in the Viewer will be easy to use.	0	0	2	4	13	57	9	39	0	0	24
2. I expect the data in the Viewer will be timely.	0	0	3	13	14	61	6	26	0	0	23
3. I expect the data in the Viewer will be effective.	0	0	1	4	12	52	10	43	0	0	23
4. I expect the data in the Viewer will be pertinent.	0	0	0	0	13	57	10	43	0	0	23
5. The Viewer will help me get better patient information.	0	0	0	0	10	43	13	57	0	0	23
6. The Viewer will help me get patient information faster.	0	0	0	0	12	52	11	48	0	0	23
7. *How often do you expect to find the information you need to provide care to your patients in the Viewer?	0	0	6	26	14	61	3	13	0	0	23
8. Getting clinical information with the Viewer will save me time when providing care.	0	0	1	4	14	61	8	35	0	0	23
9. Getting clinical information with the Viewer will decrease health care costs.	0	0	2	9	14	61	7	30	0	0	23
10. Using the Viewer will decrease duplication of health care services.	0	0			13	57	10	43	0	0	23
11. Using the Viewer will reduce the probability of medication errors.	0	0	2	9	11	48	10	43	0	0	23
12. The quality of my decisions will improve because of using the Viewer.	0	0			15	65	8	35	0	0	23
13. Using the Viewer will help me improve patient health outcomes.	0	0	1	4	16	70	6	26	0	0	23
14. The efficiency of my work will improve because of using the Viewer.	0	0	4	17	14	61	5	22	0	0	23
15. Getting clinical information with the Viewer will save resources for my practice setting (i.e. fax, mail, phone, calls)	0	0	0	0	14	61	9	39	0	0	23
16. Currently, how often do you exchange information with other providers by non-electronic means (i.e. fax, mail)?	0	0	2	9	15	65	6	26	0	0	23
17. The medication history data displayed in the Viewer are user-friendly.	0	0	0	0	18	78	4	17	1	4	23
18. The discharge summary data displayed in the Viewer are user-friendly.	0	0	0	0	18	78	5	22			23
19. The lab information data displayed in the Viewer is user-friendly.	0	0	0	0	18	78	4	17	1	4	23
20. *How often do you expect to find the medication history information you need to provide care to your patients in the Viewer?	0	0	6	26	13	57	4	17	0	0	23
21. *How often do you expect to find the lab information you need to provide care to your patients in the Viewer?	0	0	8	35	12	52	3	13	0	0	23
22. *How often do you expect to find the discharge summary information you need to provide care to your patients in the Viewer?	0	0	4	18	16	73	2	9	0	0	22
23. The medication history information will decrease duplicate therapy.	0	0	2	9	15	65	6	26	0	0	23
24. The discharge summary information will decrease duplicate therapy.	0	0	1	4	16	70	6	26	0	0	23
25. The lab information will decrease duplicate testing.	0	0	0	0	16	70	7	30	0	0	23

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

1= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

BASELINE No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
26. *How often do you expect medication history in the Viewer have an impact on your decision making process at the point of care?	0	0	5	22	16	70	2	9	0	0	23
27. *How often do you expect discharge summary in the Viewer have an impact on your decision making process at the point of care?	0	0	3	13	18	78	2	9	0	0	23
28. *How often do you expect lab information in the Viewer have an impact on your decision making process at the point of care?	0	0	5	22	17	74	1	4	0	0	23
29. Because of the Viewer, the medication reconciliation workflow at my practice setting will improve.	0	0	3	13	16	70	4	17	0	0	23
30. Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process will decrease.	0	0	2	9	17	74	4	17	0	0	23
31. The medication reconciliation process will be improved by using the Viewer because it provides more complete patient information.	0	0	4	17	15	65	4	17	0	0	23
32. I feel that patient safety will improve because of using the Viewer.	0	0	1	4	18	78	4	17	0	0	23
33. Because of the Viewer, the medication reconciliation workflow at my practice setting will be faster.	0	0	4	17	16	70	3	13	0	0	23
34. Because of the Viewer, the medication reconciliation workflow at my practice setting will be more complete.	0	0	2	9	18	78	3	13	0	0	23
35. **How do you rate the training you've received for using the Viewer?	0	0	2	9	3	13	16	70	2	9	23
36. **How do you rate the support you've received from AHCCCS using the Viewer?	0	0	3	13	1	4	12	52	7	30	23
37. *How often do you expect to use the Viewer to look for patient information?	0	0	2	9	19	83	2	9	0	0	23
38. *How often do you expect to print patient's Viewer records instead of looking at them on the computer screen?	0	0	11	48	8	35	4	17	0	0	23

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to baseline questionnaire to look at the specific answer options

INTERIM MEASUREMENT 1 No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
1. The data in the Viewer are easy to use.	0	0	3	16	10	53	6	32	0	0	19
2. The data in the Viewer are timely.	3	16	7	37	5	26	4	21	0	0	19
3. The data in the Viewer are effective.	0	0	4	21	10	53	5	26	0	0	19
4. The data in the Viewer are pertinent.	0	0	6	32	8	42	5	26	0	0	19
5. As displayed, the information in the Viewer are easy to understand.	0	0	0	0	11	58	8	42	0	0	19
6. The Viewer helps me get better patient information.	0	0	5	26	8	42	5	26	1	5	19
7. The Viewer helps me get patient information faster.	2	11	4	21	7	37	6	32	0	0	19
8. *How often did you find the information you expected to find in the Viewer?	4	21	9	47	4	21	2	11	0	0	19
9. *How often did you find the information you needed to provide care to your patients in the Viewer?	5	26	9	47	2	11	3	16	0	0	19
10. Getting clinical information with the Viewer saves me time when providing care.	0	0	6	32	7	37	4	21	2	11	19
11. Getting clinical information with the Viewer decreases health care costs.	1	6	4	22	6	33	4	22	3	17	18
12. Using the Viewer decreases duplication of health care services.	1	5	3	16	8	42	5	26	2	11	19
13. Using the Viewer reduces the probability of medication errors.	0	0	2	11	10	53	5	26	2	11	19
14. The quality of my decisions has improved because of using the Viewer.	1	5	4	21	6	32	5	26	3	16	19
15. Using the Viewer helps me improve patient health outcomes.	1	5	3	16	7	37	5	26	3	16	19
16. The efficiency of my work has improved because of using the Viewer.	0	0	8	42	5	26	3	16	3	16	19
17. Getting clinical information with the Viewer saves resources for my practice setting (i.e. fax, mail, phone, calls).	1	5	4	21	6	32	4	21	4	21	19
18. *How often does using the Viewer have an impact on your decision making process at the point of care?	2	11	9	47	3	16	2	11	3	16	19
19. After the implementation of the Viewer, how often did you exchange information with other providers by non-electronic means (i.e. fax, mail)?	5	28	5	28	3	17	2	11	3	17	18
20. The medication history data displayed in the Viewer are user-friendly.	0	0	1	6	14	78	2	11	1	6	18
21. The discharge summary data displayed in the Viewer are user-friendly.	0	0	1	6	7	39	1	6	9	50	18
22. The lab information data displayed in the Viewer are user-friendly.	0	0	1	6	5	28	1	6	11	61	18
23. *How often did you find the medication history information you needed to provide care to your patients in the Viewer?	1	6	7	39	6	33	3	17	1	6	18
24. *How often did you find the lab information you needed to provide care to your patients in the Viewer?	11	61	4	22	1	6	1	6	1	6	18
25. *How often did you find the discharge summary information you needed to provide care to your patients in the Viewer?	9	50	6	33	2	11	1	6	0	0	18
26. The medication history information in the Viewer decreases duplicate therapy.	0	0	0	0	14	78	2	11	2	11	18

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

INTERIM MEASUREMENT 1 No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
27. The discharge summary information in the Viewer decreases duplicate therapy.	0	0	3	17	3	17	3	17	8	50	17
28. The lab information in the Viewer decreases duplicate testing.	0	0	1	6	4	22	3	17	10	56	18
29. *How often does medication history in the Viewer have an impact on your decision making process at the point of care?	0	0	7	39	5	28	2	11	4	22	18
30. *How often does discharge summary in the Viewer have an impact on your decision making process at the point of care?	2	11	2	11	3	17	2	11	9	50	18
31. *How often does lab information in the Viewer have an impact on your decision making process at the point of care?	1	6	3	18	2	12	2	12	9	53	17
32. Because of the Viewer, the medication reconciliation workflow at my practice setting has improved.	1	5	7	37	6	32	1	5	4	21	19
33. Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process has decreased.	2	11	5	26	7	37	1	5	4	21	19
34. The medication reconciliation process is improved by using the Viewer because it provides more complete patient information.	1	5	2	11	9	47	3	16	4	21	19
35. I feel that patient safety has improved because of using the Viewer.	1	5	4	21	5	26	6	32	3	16	19
36. Because of the Viewer, the medication reconciliation workflow at my practice setting is faster.	1	5	7	37	4	21	2	11	5	26	19
37. Because of the Viewer, the medication reconciliation workflow at my practice setting is more complete.	1	5	4	21	8	42	1	5	5	26	19
38. *How do you rate the training you've received for using the Viewer?	0	0	3	16	4	21	12	63	0	0	19
39. *How do you rate the support you've received from AHCCCS using the Viewer?	0	0	2	11	2	11	14	74	1	5	19
40. *How often do you have technical difficulties using the Viewer?	7	37	11	58	1	5	0	0	0	0	19
41. *How often do you have technical difficulties searching the information in the Viewer?	7	37	10	53	1	5	1	5	0	0	19
42. *How often did you use the Viewer to look for patient information this week?	0	0	14	74	5	26	0	0	0	0	19
43. *On average, how often are you able to log in to the Viewer on the first try?	0	0	1	5	5	26	13	68	0	0	19
44. *How often did you find data inaccuracies in the Viewer records overall?	7	37	8	42	0	0	0	0	5	21	20
45. *How often did you find data inaccuracies in the Viewer discharge summaries?	4	22	3	17	1	6	0	0	10	56	18
46. *How often did you find data inaccuracies in the Viewer lab information?	3	16	3	16	0	0	0	0	13	68	19
47. *How often did you find data inaccuracies in the Viewer medication history?	6	32	5	26	3	16	0	0	5	26	19
48. *How often do you print patient's Viewer records instead of looking at them on the computer screen?	9	50	5	28	1	6	1	6	2	11	18
49. *If you printed a record, how often did it successfully print?	0	0	0	0	0	0	8	42	11	58	19
50. *How often did you use a new window to compare multiple records at once?	10	53	2	11	3	16	0	0	4	21	19
51. **Which search option did you use the most?	0	0	18	95	1	5	0	0	0	0	19
52. *When you use the Name search option how often did you find your patient?	2	11	7	39	8	44	1	6	0	0	18

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

INTERIM MEASUREMENT 1 No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
53. *When you use the AHCCCS ID search option how often did you find your patient?	3	16	2	11			1	5	13	68	19
54. *How often did the search options provide you direct patient "hits" for the patient you were searching for?	2	11	7	39	7	39	2	11	0	0	18
55. **When using the Name search which of the (4) fields did you use most?	18	95	0	0	0	0	0	0	1	5	19
56. **When using the Name search which of the (4) fields did you use 2nd most?	0	0	17	89	0	0	1	5	1	5	19
57. **When using the Name search which of the (4) fields did you use 3rd most?	0	0	0	0	10	53	8	42	1	5	19
58. **When using the Name search which of the (4) fields did you use least?	0	0	1	5	8	42	9	47	1	5	19
59. Attesting your relationship to a patient each time is a good way for ensuring privacy.	0	0	2	11	10	53	6	32	1	5	19
60. The password setting process for the viewer is logical	0	0	0	0	16	84	3	16	0	0	19
61. The implementation of the Viewer was successful.	1	6	1	6	10	56	6	33	0	0	18
62. **The system logs the user out after 15 minutes of inactivity. This is…	1	10	16	84	1	5	0	0	0	0	18

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

INTERIM MEASUREMENT 2 No. (%)											
	1	%	2	%	3	%	4	%	N/A	%	Total N
1. The data in the Viewer are easy to use.	0	0	0	0	3	20	11	73	1	7	15
2. The data in the Viewer are timely.	1	7	6	40	6	40	1	7	1	7	15
3. The data in the Viewer are effective.	0	0	1	7	9	60	2	13	3	20	15
4. The data in the Viewer are pertinent.	0	0	2	13	8	53	2	13	3	20	15
5. As displayed, the information in the Viewer are easy to understand.	0	0			7	47	6	40	2	13	15
6. The Viewer helps me get better patient information.	0	0	2	13	8	53	3	20	2	13	15
7. The Viewer helps me get patient information faster.	0	0	2	13	7	47	3	20	3	20	15
8. *How often did you find the information you expected to find in the Viewer?	3	20	7	47	4	27	0	0	1	7	15
9. *How often did you find the information you needed to provide care to your patients in the Viewer?	3	20	9	60	2	13	0	0	1	7	15
10. Getting clinical information with the Viewer saves me time when providing care.	0	0	5	33	6	40	1	7	3	20	15
11. Getting clinical information with the Viewer decreases health care costs.	0	0	5	33	4	27	2	13	4	27	15
12. Using the Viewer decreases duplication of health care services.	0	0	2	13	5	33	4	27	4	27	15
13. Using the Viewer reduces the probability of medication errors.	0	0	1	7	6	40	4	27	4	27	15
14. The quality of my decisions has improved because of using the Viewer.	0	0	5	33	5	33	3	20	2	13	15
15. Using the Viewer helps me improve patient health outcomes.	0	0	4	27	5	33	3	20	3	20	15
16. The efficiency of my work has improved because of using the Viewer.	0	0	7	50	6	43	0	0	1	7	14
17. Getting clinical information with the Viewer saves resources for my practice setting (i.e. fax, mail, phone, calls).	0	0	5	36	7	50	0	0	2	14	14
18. *How often does using the Viewer have an impact on your decision making process at the point of care?	4	29	7	50	2	14	0	0	1	7	14
19. After the implementation of the Viewer, how often did you exchange information with other providers by non-electronic means (i.e. fax, mail)?	3	21	5	36	4	29	0	0	2	14	14
20. The medication history data displayed in the Viewer are user-friendly.	0	0	0	0	11	79	1	7	2	14	14
21. The discharge summary data displayed in the Viewer are user-friendly.	0	0	0	0	6	43	1	7	7	50	14
22. The lab information data displayed in the Viewer are user-friendly.	0	0	0	0	3	21	0	0	11	79	14
23. *How often did you find the medication history information you needed to provide care to your patients in the Viewer?	1	7	5	36	6	43	1	7	1	7	14
24. *How often did you find the lab information you needed to provide care to your patients in the Viewer?	6	43	4	29	1	7	0	0	3	21	14
25. *How often did you find the discharge summary information you needed to provide care to your patients in the Viewer?	6	43	4	29	2	14	0	0	2	14	14
26. The medication history information in the Viewer decreases duplicate therapy.	0	0	4	31	6	46	1	8	2	15	13

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

INTERIM MEASUREMENT 2 No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
27. The discharge summary information in the Viewer decreases duplicate therapy.	0	0	3	21	4	29	0	0	7	50	14
28. The lab information in the Viewer decreases duplicate testing.	0	0	1	8	2	15	1	8	9	69	13
29. *How often does medication history in the Viewer have an impact on your decision making process at the point of care?	4	29	2	14	6	43	0	0	2	14	14
30. *How often does discharge summary in the Viewer have an impact on your decision making process at the point of care?	5	36	2	14	2	14	0	0	5	36	14
31. *How often does lab information in the Viewer have an impact on your decision making process at the point of care?	3	21	2	14	2	14	0	0	7	50	14
32. Because of the Viewer, the medication reconciliation workflow at my practice setting has improved.	0	0	6	43	5	36	0	0	3	21	14
33. Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process has decreased.	0	0	5	36	7	50	0	0	2	14	14
34. The medication reconciliation process is improved by using the Viewer because it provides more complete patient information.	0	0	4	29	7	50	1	7	2	14	14
35. I feel that patient safety has improved because of using the Viewer.	0	0	4	29	7	50	0	0	3	21	14
36. Because of the Viewer, the medication reconciliation workflow at my practice setting is faster.	0	0	7	50	5	36	2	14	0	0	14
37. Because of the Viewer, the medication reconciliation workflow at my practice setting is more complete.	0	0	5	36	7	50	0	0	2	14	14
38. *How do you rate the training you've received for using the Viewer?	0	0	1	7	2	14	11	79	0	0	14
39. *How do you rate the support you've received from AHCCCS using the Viewer?	0	0	1	7	4	29	9	64	0	0	14
40. *How often do you have technical difficulties using the Viewer?	5	36	7	50	0	0	0	0	2	14	14
41. *How often do you have technical difficulties searching the information in the Viewer?	7	50	7	50	0	0	0	0	0		14
42. *How often did you use the Viewer to look for patient information this week?	0	0	10	67	3	20	0	0	2	13	15
43. *On average, how often are you able to log in to the Viewer on the first try?	0	0			3	20	11	73	1	7	15
44. *How often did you find data inaccuracies in the Viewer records overall?	6	40	3	20	1	7	1	7	4	27	15
45. *How often did you find data inaccuracies in the Viewer discharge summaries?	3	20	2	13	1	7	0	0	9	60	15
46. *How often did you find data inaccuracies in the Viewer lab information?	1	7	1	7			0	0	5	87	7
47. *How often did you find data inaccuracies in the Viewer medication history?	6	40	3	20	1	7	0	0	5	33	15
48. *How often do you print patient's Viewer records instead of looking at them on the computer screen?	3	20	5	33	5	33	0	0	2	13	15
49. *If you printed a record, how often did it successfully print?	1	7	0	0	1	7	8	53	5	33	15
50. *How often did you use a new window to compare multiple records at once?	10	67	1	7	0	0	0	0	4	27	15
51. **Which search option did you use the most?	0	0	14	93	0	0	0	0	1	7	15
52. *When you use the Name search option how often did you find your patient?	2	13	6	40	6	40	0	0	1	7	15

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

INTERIM MEASUREMENT 2 No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
53. *When you use the AHCCCS ID search option how often did you find your patient?	2	13	1	7	0	0	1	7	11	73	15
54. *How often did the search options provide you direct patient "hits" for the patient you were searching for?	2	13	4	27	7	47	0	0	2	13	15
55. **When using the Name search which of the (4) fields did you use most?	13	87	1	7	0	0	0	0	1	7	15
56. **When using the Name search which of the (4) fields did you use 2nd most?	1	7	11	73	1	7	1	7	1	7	15
57. **When using the Name search which of the (4) fields did you use 3rd most?	0	0	2	13	6	40	6	40	1	7	15
58. **When using the Name search which of the (4) fields did you use least?	0	0	2	14	6	43	5	36	1	7	14
59. Attesting your relationship to a patient each time is a good way for ensuring privacy.	0	0	3	20	10	67	0	0	2	13	15
60. The password setting process for the viewer is logical	0	0	0	0	11	73	2	13	2	13	15
61. The implementation of the Viewer was successful.	0	0	0	0	11	73	3	20	1	7	15
62. **The system logs the user out after 15 minutes of inactivity. This is…	2	13	9	60	2	13	0	0	2	13	15

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

FINAL MEASUREMENT No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
1. The data in the Viewer are easy to use.	0	0	0	0	5	36	7	50	2	14	14
2. The data in the Viewer are timely.	0	0	6	43	4	28	1	7	3	21	14
3. The data in the Viewer are effective.	0	0	1	8	6	46	4	31	2	15	13
4. The data in the Viewer are pertinent.	0	0	2	15	4	31	5	38	2	15	13
5. As displayed, the information in the Viewer are easy to understand.	0	0	0	0	6	43	6	43	2	14	14
6. The Viewer helps me get better patient information.	1	7	0	0	5	36	6	43	2	14	14
7. The Viewer helps me get patient information faster.	1	7	1	7	6	43	4	28	2	14	14
8. *How often did you find the information you expected to find in the Viewer?	0	0	6	43	6	43	0	0	2	14	14
9. *How often did you find the information you needed to provide care to your patients in the Viewer?	0	0	8	57	4	28	0	0	2	14	14
10. Getting clinical information with the Viewer saves me time when providing care.	1	7	1	7	9	64	1	7	2	14	14
11. Getting clinical information with the Viewer decreases health care costs.	1	7	0	0	8	57	2	14	3	21	14
12. Using the Viewer decreases duplication of health care services.	1	7	1	7	7	50	3	21	2	14	14
13. Using the Viewer reduces the probability of medication errors.	1	7	1	7	4	28	6	43	2	14	14
14. The quality of my decisions has improved because of using the Viewer.	1	7	1	7	9	64	1	7	2	14	14
15. Using the Viewer helps me improve patient health outcomes.	1	7	1	7	7	50	2	14	3	21	14
16. The efficiency of my work has improved because of using the Viewer.	1	7	5	36	5	36	1	7	2	14	14
17. Getting clinical information with the Viewer saves resources for my practice setting (i.e. fax, mail, phone, calls).	1	7	1	7	7	50	2	14	3	21	14
18. *How often does using the Viewer have an impact on your decision making process at the point of care?	0	0	10	71	3	21	0	0	1	7	14
19. After the implementation of the Viewer, how often did you exchange information with other providers by non-electronic means (i.e. fax, mail)?	1	7	1	7	8	57	1	7	3	21	14
20. The medication history data displayed in the Viewer are user-friendly.	0	0	0	0	7	50	6	43	1	7	14
21. The discharge summary data displayed in the Viewer are user-friendly.	0	0	1	8	3	23	4	31	5	38	13
22. The lab information data displayed in the Viewer are user-friendly.	0	0	1	8	3	23	3	23	6	46	13
23. *How often did you find the medication history information you needed to provide care to your patients in the Viewer?	0	0	6	43	7	50	0	0	1	7	14
24. *How often did you find the lab information you needed to provide care to your patients in the Viewer?	4	28	6	43	0	0	3	21	1	7	14
25. *How often did you find the discharge summary information you needed to provide care to your patients in the Viewer?	2	15	7	54	2	15	0	0	2	15	13
26. The medication history information in the Viewer decreases duplicate therapy.	1	7	1	7	8	57	3	21	1	7	14

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

FINAL MEASUREMENT No. (%)											
	1	%	2	%	3	%	4	%	N/A	%	Total N
27. The discharge summary information in the Viewer decreases duplicate therapy.	1	8	0	0	3	23	3	23	6	46	13
28. The lab information in the Viewer decreases duplicate testing.	1	7	0	0	4	28	5	36	4	28	14
29. *How often does medication history in the Viewer have an impact on your decision making process at the point of care?	1	7	3	21	0	0	9	64	1	7	14
30. *How often does discharge summary in the Viewer have an impact on your decision making process at the point of care?	1	7	5	36	2	14	2	14	4	28	14
31. *How often does lab information in the Viewer have an impact on your decision making process at the point of care?	2	15	3	23	3	23	2	15	3	23	13
32. Because of the Viewer, the medication reconciliation workflow at my practice setting has improved.			2	28	9	64			1	7	12
33. Because of the Viewer, the number of external phone calls I make to obtain information for the medication reconciliation process has decreased.	1	7	2	14	8	57	1	7	2	14	14
34. The medication reconciliation process is improved by using the Viewer because it provides more complete patient information.	1	7	2	14	8	57	1	7	2	14	14
35. I feel that patient safety has improved because of using the Viewer.	1	7	1	7	9	64	1	7	2	14	14
36. Because of the Viewer, the medication reconciliation workflow at my practice setting is faster.	1	7	2	14	8	57	1	7	2	14	14
37. Because of the Viewer, the medication reconciliation workflow at my practice setting is more complete.	1	7	2	14	8	57	1	7	2	14	14
38. *How do you rate the training you've received for using the Viewer?	0	0	2	14	3	21	8	57	1	7	14
39. *How do you rate the support you've received from AHCCCS using the Viewer?	0	0	1	7	3	21	9	64	1	7	14
40. *How often do you have technical difficulties using the Viewer?	2	14	9	64	1	7	1	7	1	7	14
41. *How often do you have technical difficulties searching the information in the Viewer?	5	36	7	50	0	0	1	7	1	7	14
42. *How often did you use the Viewer to look for patient information this week?	0	0	11	78	2	14	0	0	1	7	14
43. *On average, how often are you able to log in to the Viewer on the first try?	0	0	1	7	5	36	7	50	1	7	14
44. *How often did you find data inaccuracies in the Viewer records overall?	7	50	3	21	0	0	1	7	3	21	14
45. *How often did you find data inaccuracies in the Viewer discharge summaries?	4	31	2	15	0	0	0	0	7	54	13
46. *How often did you find data inaccuracies in the Viewer lab information?	5	38	1	8	0	0	1	8	6	46	13
47. *How often did you find data inaccuracies in the Viewer medication history?	4	31	3	23	0	0	1	8	5	38	13
48. *How often do you print patient's Viewer records instead of looking at them on the computer screen?	2	14	8	57	3	21	0	0	1	7	14
49. *If you printed a record, how often did it successfully print?	0	0	0	0	2	14	6	43	6	43	14
50. *How often did you use a new window to compare multiple records at once?	5	36	6	43	13	93	0	0	2	14	26
51. **Which search option did you use the most?	0	0	13	93	0	0	0	0	1	7	14
52. *When you use the Name search option how often did you find your patient?	0	0	6	43	6	43	1	7	1	7	14

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options

FINAL MEASUREMENT No. (%)											
	1	**%**	**2**	**%**	**3**	**%**	**4**	**%**	**N/A**	**%**	**Total N**
53. *When you use the AHCCCS ID search option how often did you find your patient?	1	8	0	0	1	8	0	0	11	84	13
54. *How often did the search options provide you direct patient "hits" for the patient you were searching for?	0	0	5	38	6	46	1	8	1	8	13
55. **When using the Name search which of the (4) fields did you use most?	13	93	0	0	0	0	0	0	1	7	14
56. **When using the Name search which of the (4) fields did you use 2nd most?	0	0	10	71	3	21	0	0	1	7	14
57. **When using the Name search which of the (4) fields did you use 3rd most?	0	0	1	7	4	29	8	57	1	7	14
58. **When using the Name search which of the (4) fields did you use least?	0	0	2	14	6	43	5	35	1	7	14
59. Attesting your relationship to a patient each time is a good way for ensuring privacy.	0	0	0	0	8	57	5	36	1	7	14
60. The password setting process for the viewer is logical	1	7	0	0	9	64	3	21	1	7	14
61. The implementation of the Viewer was successful.	0	0	2	14	7	50	4	28	1	7	14
62. **The system logs the user out after 15 minutes of inactivity. This is…	2	14	11	78	0	0	0	0	1	7	14

1= Strongly Disagree **2**=Disagree **3**=Agree **4**=Strongly Agree **5**=Not Applicable

* **1**= Never **2**=Rarely **3**=Often **4**=Always **5**=Not Applicable

** Please refer to monthly questionnaire to look at the specific answer options